Policies for Stagflation:

Focus on Supply

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Vol 1

Policies for Stagflation:
Focus on Supply

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Introduction

Lorie Tarshis

Stagflation, now a pandemic, has already mounted the most severe assault on world economic well-being since the Depression and the war that followed. It has resisted all efforts to bring it under control. Its inflation component, already the cause of grave inequities and the loss of economic efficiency, threatens the social fabric by yielding very large unjustified gains to some and imposing unintended hardships on others. Its stagnation component has meant a serious slowing down in the rate of growth in almost every economy, recession and unemployment, and again serious social strains as the public's expectations of a brighter future have had to be scaled down, and down again.

Canada and Ontario have not escaped those difficulties. While some other economies are suffering more rapid inflation and heavier unemployment than our own, we have no cause for complacency.

The irony is that physically the world's economies are now probably stronger than they have ever been. The size and skills of their labour forces, their wealth in capital assets, and the productive technologies at their command are greater than at any time in the past. These and other favourable developments should enable the major economies to produce more than ever before, and because their populations have been growing less quickly, to provide the average person with a level of living superior to anything known up to now, despite the increasing scarcity of energy. However, though productive plant has not been destroyed, though labour is at least as capable of work as ever, most economies are now producing less than they can and some less than they produced before. The result is that ordinary people are losing hope. They read books that tell them how they can profit from crisis, flourish in recession, survive crash and disaster. From disappointment to frustration is one short step, and from frustration to desparation is probably no farther.

Government policy, as guided by the conventional wisdom, would have us all pull in our belts - a good enough prescription for an inflation caused by excess demand. Accordingly taxes are raised and the supply of money and credit is restricted, while interest rates reach peaks never known before. But most economists see such measures as likely to increase unemployment, at least in the short run, and Britain's example appears to support their view. If the only cure for inflation is to deepen stagnation, it would not be at all surprising that many are driven to desparation.

When the Ontario Economic Council decided to sponsor this conference, it did not expect that in the course of the discussions a nostrum would be ground out that governments could apply directly. Its hope, rather, was that governments would be persuaded of the importance of keeping their eyes open for the effects of their policies, not only on aggregate demand, but also on the aggregate supply function. As Lipsey suggested in his talk, a significant cause of stagflation in Canada, as elsewhere, has been a succession of untoward movements of that supply function - some of them the result of government actions including, incidentally, actions that the government had taken in order to control the problem.

If the government wanted to increase the output of apples and simultaneously bring the price down, it would not simply try to persuade buyers to lower their demand for apples. Though such measures might cause apple prices to drop, they would also lead to a fall in output. Nor would the government simply encourage demand, because an increase in demand, though it would persuade producers to increase their output, might also cause the price to rise. If this dual goal - which is rather like that of easing stagflation - were to be achieved, governments would have to encourage an increase in supply as well as an increase in demand. Demand measures alone would not work. The situation would call for a mix of demand and supply measures.

There are reasons why, in the first twenty-five years after the war, a macro-economic policy concerned solely with demand was successful. But, in a world buffetted as never before by OPEC, by severe harvest failures, by decidedly unstable exchange rates, and by labour market developments that meant that any rise in prices would cause an increase almost as large in wage rates, it becomes necessary to pay attention to supply as well. However, our 'focus on supply' was not intended to suggest that we should forget demand, which is no less important than supply.

We hope that this published record of the conference - the papers presented, the remarks of the panelists, some of the discussion from the floor, and the background papers - will prove useful to government officials at every level - federal and provincial, senior and junior; to professional economists, their students, and clients; and to the media. The effort to control stagflation will require an enlightened public and co-operation between the federal and provincial governments.

The conference was held in Toronto on 24 and 25 November 1980.

Supply-side economics: a survey

Richard G. Lipsey

INTRODUCTION

I have been asked in this paper to survey the issues raised by the application of supply-side economics to our models of inflation. Some of the necessary distinctions can be made most easily by using the economist's aggregate demand and aggregate supply diagrams. These, however, are not necessary, and to make this paper more comprehensible to the non-specialist reader, the text is written without any reliance on the diagrams, which are for those who find them helpful.

First, what is supply-side economics? It means many things to many people. It has macro- and micro-economic and political dimensions, which can be summarized as follows:

1 It provides an explanation of inflation and unemployment that supplements the more traditional demand-side explanations.

2 It seeks to discredit all forms of demand management as outmoded Keynesian activism.

3 It emphasizes certain micro-economic supply relations that may influence the economy's productive capacity and the average price at which output will be delivered. (In economists' jargon: influencing the position and rate of change of various parts of the aggregate supply curve.)

4 It is an attempt to discredit all government micro-economic policies and to argue for a return to a more or less complete laissez-faire price system.

Points (1) and (3) are the core of the economics of the supply side and are sometimes used to support variants of the extreme political positions taken in (2) and (4). As part of the transition from (1) to (2) and from (3) to (4), 'Keynesian' has been made a term of abuse with meanings as vague and as varied as the term 'supply-side economics' itself.

The grain of truth in the contrasting of Keynesian and supply-side economics is that Keynes and many of his immediate followers in Cambridge held rather pessimistic views about the ability of the unhindered market to produce desirable results, while many advocates of supply-side economics hold optimistic views. The contrast is confusing, however, because Keynesian ideas permeate all our thinking and all our macro-economic models. In some sense, therefore, we are all Keynesians, although in other senses very few of us are. Thus, the commonly heard attacks on Keynesianism, in which the attacker neglects to define the term carefully, contain much emotion but little meaning. In the usual attack 'Keynesianism' in its broadest usage has come to mean any activist economic policy in any macro or micro setting and under any circumstances of which the speaker disapproves.

Aggregate demand and aggregate supply

Much will be said at this conference about aggregate demand and aggregate supply; so perhaps I should define them at the outset. Aggregate supply refers to the total quantity of output produced by the economy - to our GNP. The aggregate supply curve, or function, relates the GNP produced to the price level - the average level of all prices in the economy.

Aggregate demand refers to the total amount of the nation's output that will be purchased, the GNP. It is the sum of the consumption goods and investment goods purchased by the private sector, the goods and services purchased by the government (many of which are also produced by the government), and net exports. The aggregate demand curve, or function, shows the relation between the total output that will be purchased and the price level.

The issues that we will discuss at this conference relate mainly to the aggregate supply curve. Views on the aggregate demand curve have not changed significantly since the early days of Keynesian economics. The key point about the aggregate demand curve is that it slopes upward to the left: a rise in the price level lowers the total quantity of GNP that will be demanded. This relation is important to an understanding of supply-side economics; so we should note how it works. The aggregate demand curve is drawn for a constant money supply. A rise in the price level increases the need for money to finance the higher dollar values of cash flows. The extra need for money, acting on a constant amount of money, creates a shortage of money that drives up interest rates. More expensive and tighter credit reduces households' spending both on credit-financed purchases of consumer goods and on housing; it also reduces firms' spending on capital goods - and lower spending means a lower GNP.

This relation is so important for understanding stagflation and aggregate supply controversies that it is worth summarizing once again: The aggregate demand curve refers to a fixed money supply and shows that a rise in the price level reduces the demand for the nation's output because it causes a money shortage that raises interest rates, and this in turn dampens both consumption and investment.

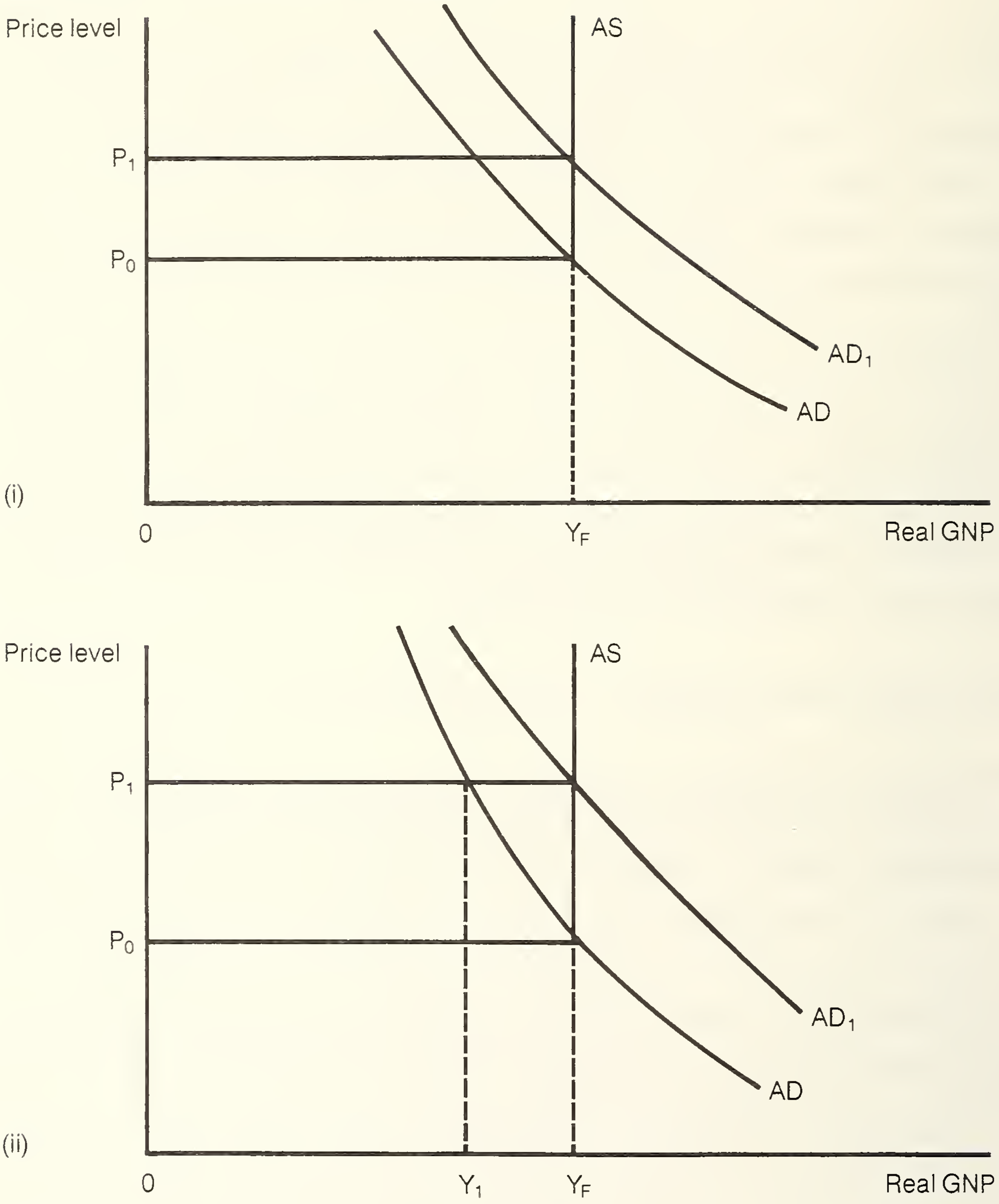
Demand- and supply-side inflations

The two concepts of aggregate demand and aggregate supply lead to an important distinction between demand-side and supply-side inflation. To see the distinction consider a position of full employment and stable prices. Then let one or the other curve shift to cause a rise in prices. (Figure 1).

A rise in aggregate demand creates demand that cannot be satisfied, and a classic demand inflation occurs. During a period of boom prices rise with output at or near its full-employment level.

An upward shift in aggregate supply means that the prices at which output will be supplied rise (possibly owing to a rise in the prices of imported materials). This rise in the price level pushes the economy upwards and leftwards along its fixed aggregate demand curve (because the rise in prices acting on a fixed money supply creates a shortage of money that raises interest rates and lowers spending). Supply-side inflations are stagflations with rising prices that are accompanied by unemployment and falling output. The 'stag' part of the inflation can only be avoided by increasing the money supply sufficiently to alleviate the money shortage and prevent interest rates from rising. In this case prices rise but output and employment do not fall.

Figure 1
Demand- and supply-side inflations



NOTES:

- AD is aggregate demand; AS is aggregate supply
- The rise in aggregate demand from AD to AD_1 in part (i) causes a demand-side inflation that raises the price level from P_0 to P_1 while leaving GNP at its full-employment level of Y_F.
- A rise in aggregate supply from P_0AS to P_1AS causes a supply-side inflation that raises the price level from P_0 to P_1 and lowers GNP from Y_F to Y_1. The 'stag' part of the inflation can be avoided by raising aggregate demand to AD_1, but the inflation part is unavoidable.
- The aggregate demand and supply curves in these diagrams are used only to make some important distinctions. No particular significance should be placed on the precise shapes shown in the figures. The kinked aggregate

supply curve captures the simple early Keynesian assumptions described in the text, while all that matters about the aggregate demand curve for present purposes is that it is downward sloping.

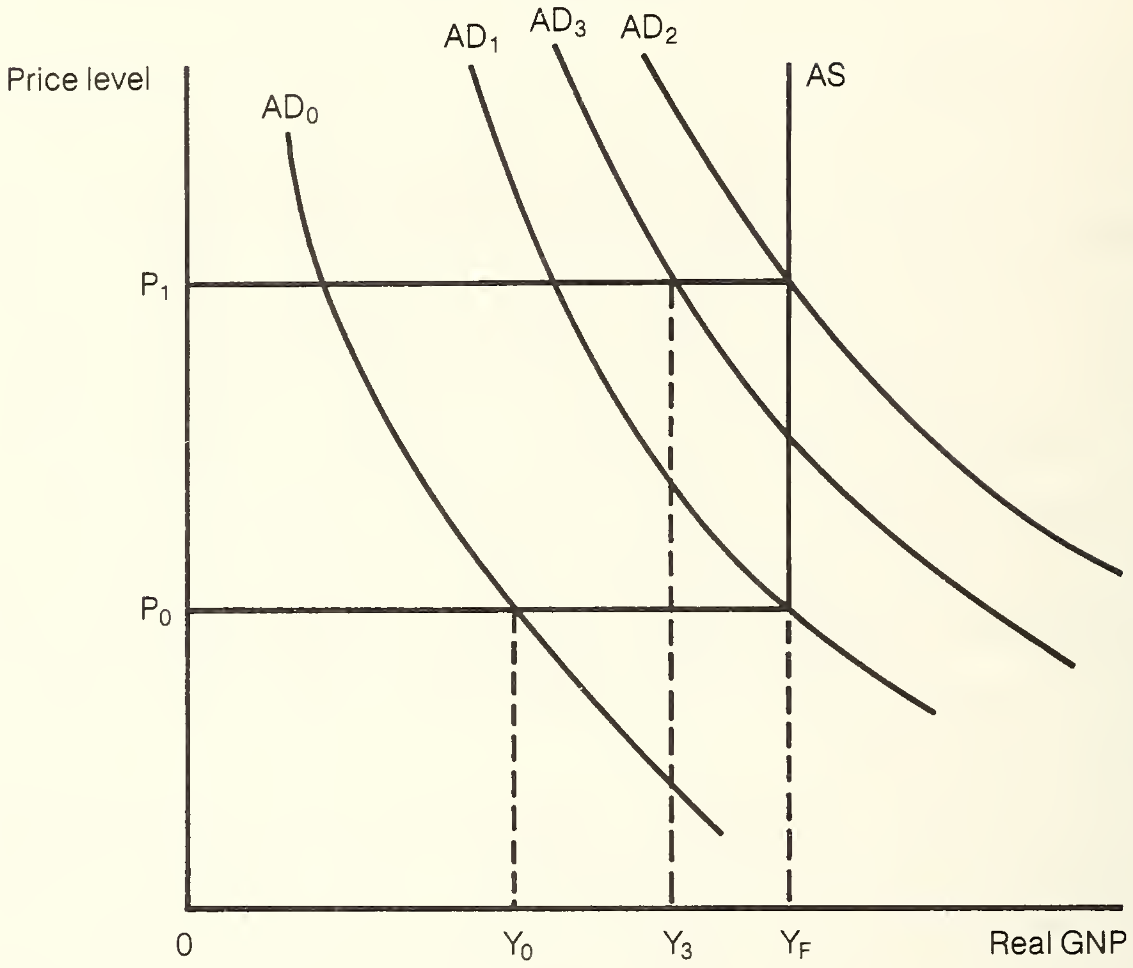
Demand-side macro-economics

Following the publication of Keynes's General Theory and Hicks's famous review, Keynesians emphasized the demand side of the economy. The supply side of the economy was usually modelled, until the 1960s, by two basic assumptions: the price level was inflexible downwards, and output could be expanded at constant prices up to full capacity, after which price increases could call forth no further increases in supply. (In economist's jargon, the aggregate supply curve was kinked as shown in Figure 1, being horizontal up to full capacity output and vertical thereafter; the curve also incorporated a ratchet effect owing to downward inflexibility of the price level, so that the kink in the aggregate supply curve always occurred at today's price level.)

In this model aggregate demand was the driving force while aggregate supply was relatively passive (see Figure 2). The model explained changes in both the prices and national income (and with it employment and unemployment) by changes in aggregate demand. The function of the aggregate supply curve was twofold. First, it determined whether a given rise in aggregate demand raised real income or prices or both, and, if both, in what proportion. If current output was below capacity, a rise in demand would raise output and employment. If current output was already at capacity, a further rise in demand would raise prices (cause an inflation) leaving output and employment unchanged at their full-employment level. The aggregate supply curve shifted upwards only when demand exceeded full-capacity output and the accompanying demand inflation raised the price level. The downward inflexibility of prices ensured that once the horizontal portion of the aggregate supply curve had risen it never fell again.

Direct supply 'shocks' were always understood to be possible: economic growth increased the level of full-capacity output, the main effect being to raise real income and hence living standards at full employment; and many things such as indirect taxes, unfavourable movements in the terms of trade, or rises in the cost of materials could increase the price at which output would be supplied (in technical jargon, would shift the ag-

Figure 2
The model driven by demand-side variation



NOTES:

- AD is aggregate demand; AS is aggregate supply
- Starting from AD$_0$ and P$_0$AS with GNP of Y$_0$ and a price level of P$_0$, the aggregate demand curve first moves to AD$_1$. This raises output and employment to their full capacity levels. Aggregate demand then expands to AD$_2$ creating excess demand at Y$_F$ and P$_0$. This causes an inflation, which takes the price level to P$_1$. A fall in aggregate demand to AD$_3$, given the downward inflexibility of prices, then takes GNP to Y$_3$.

gregate supply curve upwards) and cause a 'cost-push' inflation. These forces were, however, de-emphasized as minor causes of deviations in the paths of output and prices predicted from the simpler model, in which the only shifts in the aggregate supply relations were in response to excess demand at full employment output. (In technical jargon, these are called upward ratchetings of aggregate supply due to demand inflations.) In more popular and elementary treatments of the subject these 'de-emphasized' supply shocks were ignored altogether.

It is perhaps worth noting that Keynesians put more emphasis on supply-side inflation than did most monetarists, some of whom now accuse the Keynesians of having totally ignored the supply side. In the monetarist model, the price level varied only with the quantity of money. Thus, for example, an increase in indirect taxes that raised the prices of some goods would cause reductions in the prices of other goods so that the price level remained constant. This was possible because prices were flexible in both the upwards and the downwards direction in the monetarists' perfectly competitive micro model of individual markets. The Keynesian micro model had downward inflexibility of prices, and hence increases in indirect taxes raised the price level (and, if the money supply and hence the level of money demand were held constant, lowered output). Keynesians always worried about supply-side inflation arising from such causes as increases in taxes and import prices, whereas monetarists were more sceptical. Both sides agreed, however, on the overwhelming preponderance of demand-side causes as the historically important explanation of increases in prices.

In the 1960s the aggregate supply curve relating the price level to output was largely replaced by the Phillips curve, which related inflation to output. Non-recurring expansionary demand shocks starting from full employment caused transitory increases in income and employment and temporary inflation. Non-recurring contractionary shocks caused persistent reductions in income and employment that could only be removed in the absence of stabilization policy by the very slow-acting forces set up by the slow downward shift in the price level. (For a full analysis of all these demand-side Phillips curve models, see Lipsey 1978.)

Solow and Samuelson added the famous prediction that if government offset the contractionary effects of inflation by increasing the nominal stock of money so that the real stock (M/P) did not fall, the economy could be held permanently at a position of stable inflation and low employment. This was the famous Phillips curve trade-off. The theory had, however, been discredited by the early 1970s. The so-called expectations-augmented Phillips curve then replaced the simple Phillips curve in macro-economic models. (These are also described in Lipsey 1978.)

This theory is basically a demand-shock theory of inflation. It makes inflation depend on current excess demand and the expectation of future inflation. If people expect the price level to rise by, say, 5 per cent they will mark up their own prices or wages by 5 per cent just to stay even with the general rise and then worry about whether a little more or a little less than 5 per cent is required by local market conditions. If everyone does this, then the expectation of 5 per cent inflation creates the actuality of a 5 per cent inflation. The key problem is what determines the expectations of future inflation. In standard monetarist theory these expectations have demand causes, either past demand inflation extrapolated into the future or correctly anticipated future demand inflation.

SUPPLY-SIDE INFLATIONS AND STAGFLATION

In the 1970s a new phenomenon burst on western economies: rising prices combined with high and sometimes rising unemployment. This combination was dubbed 'stagflation', and at first sight it seemed incomprehensible to people used to the demand-driven model outlined above and in Figure 2. Three reactions to stagflation were evident within the economics profession in the mid 1970s.

Demand explanations

The expectations-augmented Phillips curve was first combined with adaptive expectations, which merely means that people's expectations of future inflation depends on past actual rates of inflation. This gives a possible explanation of stagflation and has the (at least for some) added advantage of leaving excess demand as the basic cause of inflation. Inflation was then the result of either current excess demand or the lagged effects of past excess demand acting through the adaptive expectations mechanism. This was certainly taken seriously as the explanation of stagflation during the mid 1970s. Closer analysis has cast doubt on it, but some monetarists may still accept it as the main explanation of the stagflation of the 1970s.

Although the expectations-augmented Phillips curve, butressed with adaptive expectations, can explain short bouts of stagflation, this theory has trouble explaining what has happened since 1975. Why did the inflation rate stay persistently around 6 per cent in the face of the most severe recession the world has known since the 1930s?

Non-Keynesian explanations

Post-Keynesians followed Sidney Weintraub, Joan Robinson, and others in announcing the end of all conventional wisdom. All we thought we had learned over the decades was useless, and we had to start building a new theory from scratch. The basic message of many economists in this camp was that there was a crisis in orthodox theory, a crisis caused by its inability to comprehend the events that overwhelmed western economies in the mid 1970s.

Monetarists who accepted the model of new classicism also accepted this view of the crisis in orthodox theory. Their equilibrium model of the business cycle accepts the perfectly competitive neo-classical model with the sole amendment that people made errors that caused output to deviate from its equilibrium, full-employment level. (See for example Lucas and Sargent 1978.)

Neo-Keynesian demand-supply explanations

Not many North American economists accepted this diagnosis of post-Keynesians, although many more popular writers did. Neo-Keynesians accepted the diagnosis that there was a crisis, not in our ability to understand events but rather in our ability to control them. To say economists have a diagnosis does not imply they have a cure. By and large they agreed with Franco Modigliani (1978, 195) when he wrote:

> The sweeping indictment [that orthodox theory is 'wildly incorrect' and 'fundamentally flawed'] confuses two kinds of crises. One is the crisis of whether these [orthodox] models have captured the world itself. The second crisis which I believe is the real problem is that the world we capture is extremely hard to tame, to cure from inflationary shocks ... So the crisis is right there in the structure of the world, not in our ability to capture that structure.

The explanation that most neo-Keynesians accept today is that the experience of 1972-5 is to be understood as an unfortunate combination of demand and supply shocks and that the stubbornness of the underlying inflation rate during the later 1970s supports Tobin's inertial theory rather than the expectational theory of the persistence of stagflation. Let us look at these in turn.

Demand and supply shocks

The classic neo-Keynesian explanation of the stagflation of the 1970s is to be found in Alan Blinder's superb book Economic Policy and the Great Stagflation (1979). According to Blinder the great stagflation was caused by:

1 some major expansionary monetary and fiscal policies in 1972-3 and a world-wide boom, followed by a world-wide recession exacerbated in the United States by the delayed effects of contractionary fiscal and monetary policies;

2 upward shifts in the aggregate supply curve as major changes in relative prices (oil, agricultural goods, and so on) passed through the system taking average prices up with them just at the time when recession was setting in;

3 a fall in aggregate demand due to a transfer of real income from domestic spenders (oil purchasers) to foreign savers (oil suppliers);

4 an added push in the United States caused by the post-controls 'price bubble' that followed the removal of wage-price controls that existed in the United States from 1971 to 1973;

5 real-wage resistance, which although not totally successful (real wages fell) introduced a wage-price spiral element to inflation in the mid 1970s. (This point is not stressed by Blinder but is given great importance in the European literature.)

Commenting on how U.S. policy exacerbated the 1974-5 depression, Blinder says the following:

> A second striking feature is how little awareness there seems to have been, in the public discussion, of the nature of the 1973-1974 inflation. Policy seems to have proceeded exactly as if the economy were experiencing a continuing inflation fueled by excessive aggregate demand - the sort of inflation that can be combatted successfully by contractionary fiscal (and monetary) policy. While this assessment was probably accurate in 1972 and early 1973, it was painfully inappropriate after late 1973, when the economy was mainly adjusting to several large one-time shocks to the price level coming from the supply side. In my view, the economy paid a high price for this misjudgment. Worse yet, the lesson of 1973-1974 has apparently not been learned. (ibid., 167).

The key to understanding what seemed so perplexing at the time is that a typical demand-shock inflation in the early 1970s turned, in the mid 1970s, into a supply-shock inflation, with rising prices and falling output. The supply shocks were rises in the price level due to (i) increasing energy prices, (ii) temporary increases in food prices, and (iii) the general post-controls bubble. The first two causes illustrate a newly important inflationary phenomenon, which must be recognized if sensible policy is to be formed: relative-price inflation. Strong increases in some prices can and do cause the price level to rise. These are supply-shock inflations, and the only thing that monetary policy can determine is whether they will be stagflations (falling output as well as rising prices) or merely inflations. (If the authorities validate the inflation by increasing the money supply, thereby shifting the aggregate demand curve outwards, output and employment need not fall).

Barry Bosworth's paper to this conference refers to some relative-price supply shocks that originate in the labour market. He explains that in certain sectors wages just keep rising independently of the state of excess demand. Those are industries that have large unions or are directly influenced by others that do, or that have a preponderance of 'career jobs.' In other sectors wages do respond to demand and a recession slows wage-costs and hence price inflation. These are sectors not influenced by unions and ones that have a preponderance of 'casual jobs.' But if wage relatives achieved at normal capacity output do not change from one cyclical peak to another, then the gains on wage restraint in the casual sector during the slump are offset by the catch-up of the casual sectors to the career sector during the recovery. According to this theory, money wage inflation becomes substantially independent of excess demand from cycle to cycle. The trend of money wage costs is then determined by the career sector, which seems relatively uninfluenced by cyclical variations in aggregate demand.

For example, in the late 1970s North American wages in the auto and steel industries continued rising at their historical rate. The severe recession led to heavy restraint in other sectors of the labour market, as a result of which wages in cars and steel rose from their long-standing relative of 1.25 average manufacturing wages to about 1.8! This of itself is a relative-price, supply-shock inflation. It raises auto and steel prices (and the prices of other commodities that use these as inputs) and lowers employment giving us a typical stagflation. In the next couple of booms there are two possible results. First, if the old relative is restored there must be a massive catch-up in the casual sector. This will mean a further major supply-side shock to the price level. The competitive positions of these industries will then be restored by a further fall in the value of the

U.S. and Canadian dollars. Second, if the old relatives are not restored, then the supply-shock inflation will not be so great but the decline in the auto and steel industries will add to the 'stag' part of our inflation. (It will also add further pressure for the government to waste scarce investment funds by supporting these industries, which will then be declining because of their uncompetitive wage structures.)

Supply-side economics provides a possible explanation of the 1970s stagflation and refutes the views of those who argued that all existing theories had been rendered obsolete by the events of the 1970s. The explanation of those events clearly lies in shifts in aggregate demand and aggregate supply. The explanation of our failure to understand what was happening in the early and mid 1970s lies in our failure to understand the importance of supply-side shifts. This much is really old-fashioned, traditional macro-economics combined with the recognition of the potential importance of supply as well as demand shocks.

Inertial versus expectational theories

By 1976 the exogenous, supply-shock inflation had receded and excess demand was clearly not a problem. The major problem that then emerged was the persistence of high underlying rates of inflation in spite of the deepest and most prolonged recession since the 1930s. It was clear that the experience of 1975-8 could be explained neither by external supply shocks pushing up the aggregate supply curve nor by a stable Phillips curve relating inflation to real GNP.

The theory of the expectations-augmented Phillips curve provides a possible explanation. The underlying inflation rate is high because people expect inflation to be high. Their behaviour in setting wages and prices in the face of these expectations then causes the high expected rate to be realized. When this theory is combined with adaptive expectations (which merely means that expectations of future inflation rates are formed by extrapolating from past inflation rates), it means that to break expectational inflation the government must find ways of forcing the actual rate down. A severe recession is the most obvious way of doing this. It is meant to cause wages and prices to rise less than the expected rate of inflation, thereby bringing down the actual rate and, in turn, the expected rate.

The really startling results arise, however, when expectational inflation is combined with the theory of rational expectations. In the new classical, monetarist model, workers and price-setters care only about their own prices in relation to the price level. Where the prices are being set over some future planning horizon, the actual price level is replaced by the expected price level. Therefore, if expectations of the price level can be altered by government policy, actual inflation that results from the sum of individual wages and price settings can also be altered. Rational expectations means that an alteration in the stance of monetary policy will reduce the expected rate of inflation even before the actual rate has responded to the monetary restraint. Hence, with only a small lag, restrictive monetary policy will reduce the rate at which individual wages and prices are being marked up.

Tobin's inertial theory denies this. He says that wage- and price-setters are concerned about their prices and wages in relation to a few closely related prices and wages. It is well known, for example, that labourers care about relatives. To this Tobin adds that wages and prices are changed only infrequently, possibly every one to two years. Thus when a particular wage is set, all the other closely related wages are predetermined, on average for a period of one-half the length over which the wage in question is now to be set. Thus whatever decision-makers expect about the inflation rate, they will be cautious in setting their wages or prices at a level that will alter its relation to other relevant wages and prices.

This theory of inertia makes any given inflation rate hard to change. We can, if we wish, add to it an asymmetry between raising and lowering relative wages and prices. For example, workers do not mind getting ahead of other closely related groups but they fiercely resist falling behind; firms do not mind raising relative prices when they know everyone is facing excess demand and will be raising theirs when their turn comes, but they resist cuts under excess-capacity situations because general price cutting will be mutually harmful. This means that the stickyness is mainly on the down side of reducing inflation. Barry Bosworth describes a similar theory in his paper; it is a theory that has the same policy consequences as Tobin's.

Tobin (1980, 62-3) states the distinction between the monetarist expectations theory and his inertial theory in the following words.

The original econometric versions of the accelerationist Phillips curve included as the augmentation term a distributed lag of past price or wage inflation rates, and either confirmed or assumed that the coefficients of the lagged variables added to unity. This augmentation variable, embodying lagged prices and wages, could be interpreted in two distinct ways. It could be a proxy for price or wage expectations, assuming these expectations are formed adaptively; because of this interpretation, equations of this specification were commonly called 'expectations-augmented.' It could represent the inertia of wage- and price-setting institutions: explicit or implicit contracts and patterns of emulation and catch-up.

The radically divergent policy implications of these two interpretations of the same statistical variable were only beginning to be appreciated in 1970. Today the distinction is the crucial issue in the controversy provoked by the new classical counter-revolution in macroeconomics. This became clear as soon as rational expectations replaced adaptive expectations in theoretical specification of wage and price determination. Then expected policies rather than past inflation histories were doing the augmenting, and those policies were thereby deprived of the power to influence real outcomes, employment, and output. But if lagged prices and wages belong in the equation in their own right, representing institutional inertia and disequilibrium adjustment, then the qualitative conclusions of the 1970s concensus still stand.

I shall not resume this debate here. In the last paper of his I heard and read, Arthur Okun (1980) did a characteristically marvelous job of enumerating those observed facts of economic fluctuations which are not consistent with the misperceptions-equilibrium theories of the new classical macro-economists.[1]

This is really a micro-economic, supply-side theory of stagflation, although it is not what is usually meant by the more conservative advocates of supply-side economics!

The neo-Keynesian diagnosis

So the diagnosis of the 1970s by neo-Keynesian economists such as Tobin and Blinder is that the early 1970s saw a traditional demand inflation, the mid 1970s a supply-shock inflation, and the late 1970s an inertial inflation that is very hard to get under control.

What this diagnosis shows is that there are two distinct types of supply-side inflations. The first is exogenous price-shock inflations (such as occurred in 1973-4), in which the aggregate supply curve is driven upwards by such forces as rises in import prices, increases in indirect taxes, and crop failures. The second is endogenous price rises, which occur because of expectations of price rises; the aggregate supply curve rises because people mark up their wages and prices in expectation of a future inflation.

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[1] Quoted with permission of The Brookings Institution.

Can demand management control a supply-side inflation?

First comes the case of an exogenous supply-shock, relative-price inflation such as we had in the mid 1970s and to some extent again at the end of the 1970s with the second major round of OPEC price increases. Keynesians answer 'no' to the question whether demand management can control a supply-side inflation. All that monetary and fiscal policy can do is to determine how much excess capacity and unemployment will accompany the exogenous rise in the price level. (See note to Figure 2(ii).)

It is also worth noting that the neo-Keynesians' argument that fiscal and monetary policies were inappropriate to the control of the exogenous supply-shock inflation of the mid 1970s does not imply that other appropriate tools were available. Indeed, exogenous supply-shock inflations caused by rises in prices of commodities such as oil or food really have to be accepted (unless the monetarists' model with downward price flexibility is true). If rising costs push the aggregate supply curve upwards, the only choice the authorities have is either to hold tight and accept rising unemployment as well or to validate the inflation and at least avoid its unemployment consequences.

The restrictive policy adopted in the United States in 1974-5 did not stop the price level from rising but did exacerbate the recession. Of course the alternative of validating the inevitable inflation to avoid the unemployment carried with it the danger of setting off a wage-price spiral as everyone tried to protect their real earnings in a situation where average real incomes had to fall. This is probably what happened in Canada to some extent.

It is not clear what monetarists think about such supply-shock inflation. Possibly some deny that it is possible, holding that because inflation is 'everywhere and always a monetary phenomenon' aggregate supply shifts cannot be a cause of inflation. Thus they merely define price increases of 1970s as not inflations. (This is discussed in more detail in Lipsey 1979.) But changes in names do not remove the need for explanations: why then did the price level rise in the 1970s even if this was not an inflation? For those who say that even the 1970s increases in the price level could not have been caused by upward shifts in the aggregate-supply curve, there must be enough downward flexibility in prices that the price level does not rise (given M constant) in the face of increases in oil and other prices. But such flexibility demonstrably does not exist. Major increases in particular import prices do cause increases in the price level.

Second comes the case of an ongoing expectational or inertial inflation, i.e. an endogenous supply-side inflation. Here monetarists operating with the new classical cum rational expectations model answer 'yes' to the question asked above. If the government were to cut monetary expansion, wage- and price-setters would anticipate a fall in the inflation rate and would then reduce their own wage and price increases so as to keep their own estimated relative prices from rising. This would bring the inflation rate downwards.

Neo-Keynesians are very pessimistic about the ease with which an ongoing inertial inflation may be reduced. Tobin estimates on the basis of past experience that four percentage point unemployment years are needed to reduce the inflation rate by 1 per cent: this means, for example, a rise in unemployment of one percentage point sustained for four years, or of two percentage points sustained for two years, or four percentage points sustained for one year. Thus an attempt to cut inflation by 2 to 3 per cent by fiscal and monetary policy by the end of the century requires a recession lasting ten to fifteen years.

Probably the most important supply-side question about inflation today is whether endogenous supply-side inflation is based on something close to rational expectations that will be quickly revised downwards in the face of severe anti-inflationary fiscal and monetary policy, or on inertias that can only be broken by a prolonged and severe recession that few democratic governments would want to start or be able to survive. If it is the latter, then the outlook is very gloomy indeed.

In view of their theory, many neo-Keynesians argue that the only way to crack inertial inflation over an acceptable time period is by some form of direct policy intervention. Tobin argues that wage-price guidelines have been effective in the past. He also argues that the Nixon wage-price controls failed because they were used at the wrong time in an attempt to curb a demand-pull inflation. (Virtually all economists agree that controls are useless against demand inflation for any other purpose than a rear-guard delaying action.) He, and most of his colleagues at Brookings, call for a temporary bout of tax-related incomes policies (TIPs). The main dissenting voice among that group has been Gardner Ackley (1978), who has argued that although those policies look good on the economist's two-factor, two-product neo-classical drawing board, they will be an administrative nightmare in the real world. Tobin, however, and most of his colleagues argue that TIPs are the only feasible way to break the inertial inflation.

From Tobin's point of view, the failure of the Canadian wage-price controls to put Canada on a different inflationary track from the United States stemmed from the excessive gradualism of the policy. All the controls did was to accompany a decline in the inflation rate from its temporary exogenous supply-shock bubble of 10 to 12 per cent down to its underlying inertial rate of 6 per cent. Just when the rate got to the level where the controls might have bitten into endogenous inertial inflation they were removed.

Today there appear to be three possible ways of attacking inflation:

¶ continue our policy of gradualism;

¶ follow the monetarists' advice and start a serious recession and force it to remain until the inflation rate comes down because the expectations and inertias have been broken;

¶ adopt a policy of rapid monetary restraint, thereby reducing the rate of monetary expansion to a rate consistent with, say, 2 to 4 per cent inflation within, say, 2 to 3 years and forcing the rate of wage and price inflation to fall over the same time by a drastic wage-price controls or, if possible, by TIPs.

Keynesians foresee some serious supply-side problems arising from the monetarist cure for inflation that relies on a severe recession to slow the inflation rate. Since the mid 1960s each recovery seems to have run into capital capacity constraints at a higher level of unemployment than the preceding recovery. Consequently, excess demand inflation sets in at a higher level of unemployment than previously. Attempts to explain this rising 'natural rate of unemployment' have almost all concentrated on labour-market phenomena. Some of these are undoubtedly important and they are emphasized by Doug Hartle's team of economists in their reports to this conference. Lester Thurow's paper suggests an additional explanation. The increasingly deep recessions may restrain capital investment over the longer and longer period of slump. The low capital investment means a lower level of capacity output compared to the capacity of the labour force. The deep recession of 1975-8 led to very low investment, and capacity restraints were encountered during the expansion of 1978-9 when unemployment was still at 6 per cent in the United States. (There was an important additional reason why capacity restraints were not at so high a level of overall unemployment. Large reductions in the value of the U.S. and Canadian dollars switched demand to the export sectors. Since the switch of supply capacity had not been completed by 1978, the expansion met supply constraints in the export sector, while the non-traded sector still had substantial excess capacity and unemployment.)

If the monetarists' inflation cure of a major recession were tried and it took anything between twice as long as many monetarists think and half as long as many Keynesians think, the cumulative effect on investment could be very serious indeed. When the inflation had finally been stopped, or slowed sufficiently, after a prolonged bout of unemployment in the range of 10 to 15 per cent and the economy allowed to expand its output, capital-capacity bottlenecks might be reached at, say, an 8 to 9 per cent unemployment rate. After such a long period of suffering no democratic government could admit that the 'natural rate of unemployment' was now 9 per cent and they would surely go on expanding demand to try for 6 or 7 per cent. This would be inflationary and within a couple of years we could be back to an underlying inflation rate of 5 to 10 per cent. When the dust had settled the whole effect of the long period of suffering would have been five to ten years of lost output due to the depression, a much higher 'natural' unemployment rate, and no lasting reduction in the inflation rate.

This once again is supply-side economics, and it says the rate of growth of capacity output (the kink in the aggregate supply curve) may not be independent of the state of aggregate demand. If demand is held too long below capacity output, capacity itself may shrink (at least compared to the potential labour force) with disastrous consequences for the inflation-unemployment trade off.

A supply-side anti-inflationary package

Those who emphasize supply-side inflations see a supply-side anti-inflationary package that combines monetary restraint, temporary incomes policy in the form of TIPs or wage-price controls, and reductions in indirect taxes and other factors that cause one-time downward shifts in the aggregate supply curve.

In this package the monetary authorities cut the rate of monetary expansion, thereby slowing the upward shift of the aggregate demand curve. Indirect taxes and other cost-increasing government policies are cut to work a one-time reduction in the aggregate supply curve, and incomes policies are used to restrain directly the upward shift in that curve.

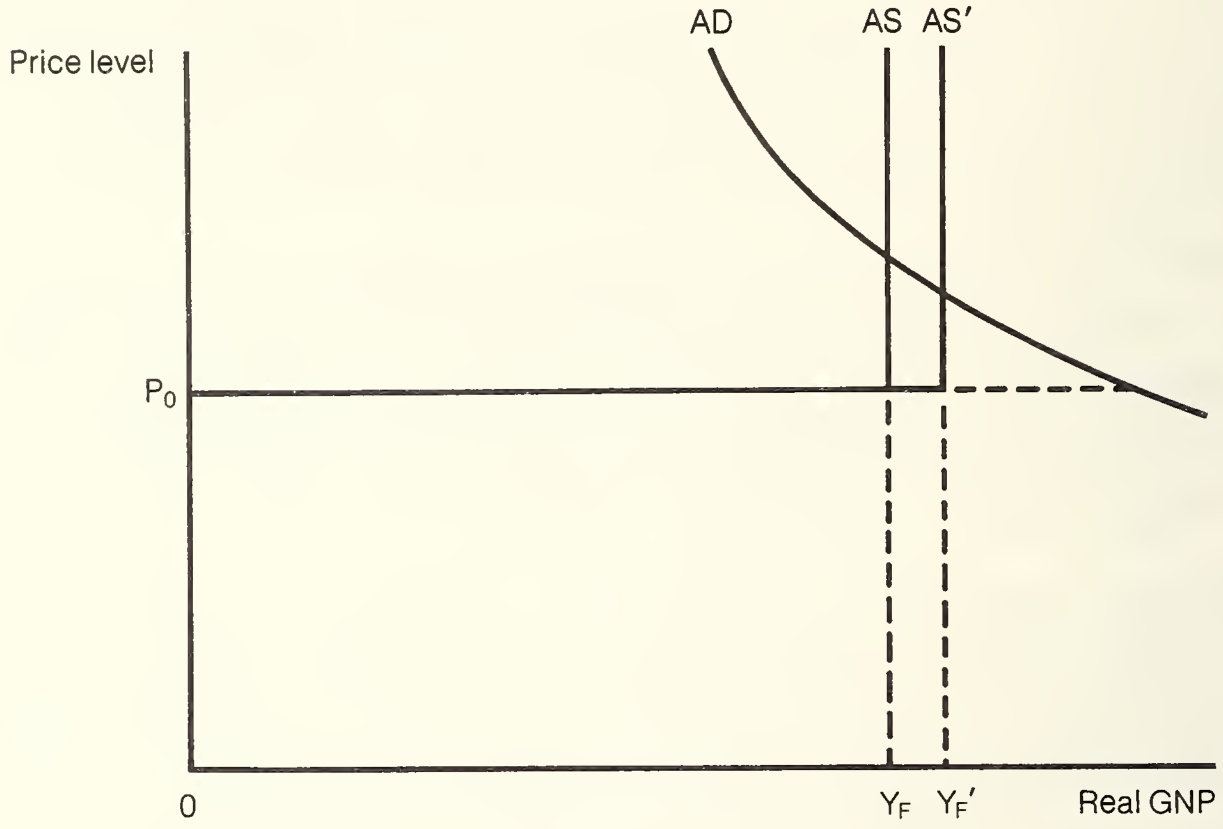
This policy package must be carefully co-ordinated and instituted at the best possible time since there is only one, or possibly two, chances to try it. Tax cuts and so on are one-for-all effects, and incomes policies that fail will be discredited and hard to reinstitute. The package sees a carefully co-ordinated demand-supply attack on inflation designed to control an inflation that has demand and supply causes. Its advocates point out that it has never been seriously tried but also warn that it must come as a whole package and not have its individual bits tried and discredited by unco-ordinated piecemeal application.

SUPPLY-SIDE ECONOMICS AND THE OUTWARD SHIFT IN THE AGGREGATE SUPPLY CURVE

We now come to the third and fourth characteristics of supply-side economics listed at the beginning of this paper. The principal distinction between (1) and (2) on the one hand and (3) and (4) on the other is this. Propositions (1) and (2) relate to upward shifts in the aggregate supply curve that provide a macro explanation of stagflation, while (3) and (4) relate to outward shifts in aggregate supply caused by micro market changes and causing growth in full employment output. (See Figure 3.)

Such policies emphasize long-term supply growth - increases in full-employment GNP. For example, in his concern about demand Keynes emphasized the depressing effects of saving on national income through its ceteris paribus effects of lowering aggregate demand. Supply-side econo-

Figure 3
Supply-side measure to increase full-employment output



NOTES:

- AD is aggregate demand; AS is aggregate supply
- The second aspect of supply-side economics emphasizes incentives that affect the growth rate and thus increase full-employment output. In the figure this is shown by the outward shift in the aggregate supply curve from AS to AS' taking full-employment income from Y_F to Y'_F.
- Such shifts are important in the long run, but, in the face of serious inflationary pressures such as exist in the figure with price level P_0 and aggregate demand of AD, small annual outward shifts in AS do little to relieve the current inflationary pressure.

mics emphasizes the long-run relation that in a fully employed economy an increase in saving is a necessary condition for an increase in growth-creating investment. It is true that saving reduces demand, other things being equal, and increases full-employment output; which effect you emphasize is a matter of the circumstances in which the extra savings are to occur and and the time horizon of the study in question.

Whatever their importance, the immediate impact of supply-side policies in reducing inflation must be small. First, to work at all they require that there be a demand inflation since there is no anti-inflationary effect from raising capacity output if there is not enough demand to employ the existing capacity. Second, they will be quantitatively insignificant in lowering a demand inflation. It would be a great success if the rate of growth of full employment output could be raised by a percentage point. Twenty years from now that would be quite an improvement in the level of national income, but one year from now it is, for given nominal income, only one percentage point off the rate of increase in prices. These supply-side measures may be very useful, but it is doubtful they will have much effect on inflation.

Even the conservative American economist Herbert Stein (1980), who could be expected to be sympathetic to many supply-side propositions, recently had this to say about supply-side economics.

> An extreme, and currently very popular, version of supply-side economics is that the way to tackle the inflation problem is from the supply side, especially by cutting taxes. The argument is simply that inflation results from an excess of demand over supply, and there is no sense in correcting that by the painful method of restricting demand when it could be done by the pleasant way of raising supply. The answer is of course equally simple. What we can do on the supply side is not big enough to solve the problem. We have demand growing by about 12 per cent a year and supply growing by about 2 per cent a year, which yields 10 per cent inflation. To increase the rate of growth of supply by 50 per cent from 2 per cent a year to 3 per cent a year, which is a difficult task, would still leave an enormous inflation, especially if the increase of supply is accomplished by means like cutting taxes which at the same time increase demand.
>
> What I have said here is not an argument for or against cutting taxes, or for or against any other policy. It surely is not meant to deny that cutting taxes and expenditures, or restructuring the tax system, can be beneficial in many respects. I am only making a plea for modesty in recognizing the difference between what one knows and what one doesn't know.
>
> Despite the tone of much of the current argument, the propositions of supply-side economics are not matters of ideology or principle. They are matters of arithmetic. So far one must say that the arithmetic of any of the 'newer' propositions is highly doubtful. Supply-side economics may yet prove to be the irritant which, like the grain of sand in the oyster shell, produces a pearl of new economic wisdom. But up to this point the pearl has not appeared.[2]

All these policies, although valuable, are likely to have small effects on existing inflation rates. They may, however, be more important 5 to 10 years from now. Les Thurow's paper discusses the reasons for the declining rate of growth of productivity, and the Hartle team discusses some supply-side causes and possible cures. If the trend growth rate of productivity continues to slow down and possibly even stablizes near zero, the accompanying slowing in the growth of full-capacity output could have serious inflationary consequences. It does not inevitably cause inflation, but it does make it more likely. Different groups will struggle for larger shares of a more slowly expanding or even a shrinking pie. Governments will be unwilling to admit that the economy, for whose management they take the credit or blame, is unable to deliver the goods. They will thus be inclined to validate the inflation that emerges from the scramble, rather than impose on a population already feeling impoverished the further punishment of the rising unemployment that follows anti-inflation policy. The pure economics of a declining absolute and relative Canadian growth rate does not necessitate increased inflation, but its political economy makes it very likely.

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[2] Quoted with permission of the author.

What then is the outlook for the influence on the supply side of Canadian government policies on the growth rate? Les Thurow's paper emphasizes one particular aspect of this question, industrial strategy. The Canadian outlook on such strategy is worrying. For example, we still prop up losers in the Maritimes and perpetuate DREE as an enormous sink hole into which capital disappears with no measurable effect on reducing regional inequalities, while the analogous, formerly depressed region of New England has enjoyed an economic revival. Les Thurow argues:

> New England is a prosperous region because it got out of its old dying industries and into new growth industries. If Washington had protected New England's old dying industries, New England would still be depressed. It is correct to point out that New England went through forty years of economic pain before it made that transition, but the correct answer to this is a national policy for aiding individuals and speeding up the transition. To prop up dying industries will only prolong the pain. Whatever the government goes they will die in the end.

So much for the past. The prospect for the future seems to me to be that our small-scale mistakes in the past may be repeated elsewhere in the economy on a much grander scale in the future. Major changes in the economy, one of the most important of whch is the rise in energy prices, are going to work major changes in the balance of industrial advantage in Canada in the next decades. The partial de-industrialization of Ontario, or at least its decline in relative industrial importance, seems likely to be dictated by market forces. Our government's policy with respect to Massey-Ferguson and Chrysler is ominous. If we try to prop up every declining industry in Ontario and Quebec we will not only waste money in what in the end is a losing game, but we will deny scarce funds to potential winners. I watched this happen with helpless dismay when I lived in Britain during the 1950s and 1960s, and I now seem destined to watch the whole tragedy re-enacted in Canada and possibly even in its great neighbour to the south. As Les Thurow observes:

> An industrial policy designed to prop up dying industries is a route to disaster. We need only look at the countries that have tried - Britain and Italy. No one can make it work. There are usually good reasons why the industry is a loser. Its market is shrinking, or the industry has lost its comparative advantage to some region of the world. But the British at least adopted a policy of propping up losers before anyone had failed in the attempt. We do not have that excuse. We have only to look around us to see that is does not work.

It is possible, even if probably not desirable, to subsidize the non-viable industries in a small peripheral sector of the economy such as the Maritimes. But if we try to do it in the core of the economy that constitutes the bulk of our industrial sector we will court disaster. The majority can subsidize the minority, but who is to foot the bill if we decide on heavy subsidies for the majority?

Les Thurow pleads for an industrial strategy that matches that of the Germans and the Japanese, that is, one that leaves private venture capital and private initiative to produce what he calls the 'sunrise industries' - the industries with growth potential - and leaves the government to channel more funds to these industries than their own private resources can produce. Active interaction between the private and public sectors is a fact of life in successful industrial economies, but a successful interaction requires leaving the private sector to perform the entrepreneurial function and using the public sector to back it with the full financial resources of the state by encouraging investment and research in industries and areas with demonstrated potential.

Whether or not it is the right answer, Les Thurow's policy contrasts dramatically with the present Canadian policy. A significant part of our current scarce investment funds are to be used to transfer ownership of existing capital in the oil industry to Canadian hands. This policy has a consequence that seems to have gone unnoticed so far. Buying out American oil firms provides no new real capital for Canada; it merely transfers ownership of existing capital and leaves the former owners with the funds needed to create new capital. There are two possibilities. First, the former owners may invest their funds in other new Canadian industries - call them the widget industries. In this case we do get new real capital but the proportion of all capital that is owned by Canadians is not increased. We merely own more of the oil industry's capital and less of the widget industry's capital. Second, and this seems much more likely to me, after the foreign investors get the message that they are unwelcome in Canada and that the proceeds of their investment may be subject to partial confiscation once the investment is made, they may invest at home in the United States or abroad in countries other than Canada. In this case when all the dust has settled, scarce Canadian investment funds have gone to create American-owned capital outside of Canada.

This is a subtle point to let me repeat the two alternatives. The Canadian governments has $x of scarce investment funds. In Case 1 it channels them into new investment projects in Canada, in which case Canada has in place all the existing capital in the oil industry plus $x of new capital in the widget industry. In Case 2 the government uses the funds to buy out existing American-owned capital in Canada; the Americans transfer the funds out of Canada and use them to create new capital elsewhere. Now there is no new capital in Canada, but a higher percentage of existing capital is owned by Canadians. I am all for Canadian ownership, other things being equal, but surely it would be better if the scarce investment funds that are available were used to ensure that the new capital these funds can finance is created in Canada rather than - as present policy seeks - abroad.

As well as this important but subtle consequence of our current oil policy, there is a more obvious and possibly equally important consequence. The lesson of supply-side economics bitterly learned by the UK, Sweden, and other more fully socialist countries is that nationalized industries do not have a good record of successful entrepreneurship. Venture capital is usually more profitably used when the managers are investing their own or their shareholders' capital rather than the tax payers'. The dismal record of nationalized industries in the UK from the East African ground nuts scheme in the 1940s to the Concord in the 1970s supports this. Yet we are now seeking to Canadianize - for which read nationalize - much of our oil industry. The government's lack of faith in private business and its touching belief, in the face of contrary evidence, that it can do better is evident in all too many of its industrial policies. If present nationalist trends continue, Canadians can possibly look forward to the not-too-distant day when their nationalized oil industry is on a level of efficiency similar to that of their nationalized post office.

And so one could go on. But time dictates that I stop here. The excuse for considering current Canadian economic policy in a conference on stagflation I have already given: if our rate of growth of real income slows down or stops altogether, the political economy of the situation will make inflations more likely. The more general reason is that for our long-term living standards, it is supply rather than demand that is the more important force. This is something economists have emphasized since Adam Smith. Under the trauma of the Depression of the 1930s, and to some extent under the influence of early Keynesians, the truth was de-emphasized because of, first, the perceived immediate problem in the 1930s of providing enough demand to get the economy back to work and, second, the apparent ability of the economy to produce sustained economic growth independent of government policy. The real importance of supply-side economics is the return to the classical truth that over the long haul supply matters more than demand.

Aggregate demand is important. Preventing demand from falling far below full-employment output is probably a necessary condition for a healthy volume of investment. Preventing aggregate demand from greatly exceeding full-employment output is certainly a necessary condition for preventing rampant inflation. But much more important in the long haul is the growth of full-employment output itself. The 1970s have provided a real shock. The natural forces of the economy can no longer be relied upon to produce an exogenous, sustained growth rate. We need to worry about the growth rate. We must rely on the private sector to provide entrepreneurship and innovation. But we also need to identify and avoid the government policies that inhibit the growth of supply and to identify and adopt the policies that, in the realities of the late twentieth century political economy, encourage the growth of supply.

This then is the real message of modern supply-side economics. Supply-side economics is here to stay. We must rapidly learn to heed its lesson and to reverse some of our current government policies that inhibit the long-term supply-side growth that can only come from a healthy and vigorous private sector.

BIBLIOGRAPHY

Ackely, G. (1978) 'Okun's new tax-based incomes policy proposal.' Economic Outlook USA 5, 8-9 (University of Michigan Survey Research Center)

Blinder, A.S. (1979) Economic Policy and the Great Stagflation (New York: Academic Press)

Lipsey, R.G. (1978) 'The place of the Phillips curve in macroeconomic models.' In A.R. Bergstrom, A.J.L. Catt, M.H. Peston, and B.D.J. Silverstone, eds, Stability and Inflation (Chichester: John Wiley and Sons)

Lipsey, R.G. (1979) 'World Inflation.' The Economic Record Dec., 283-96

Lucas, R.E. and T.J. Sargent (1978) 'After Keynesian Macroeconomics.' Pp. 49-72 in After the Phillips Curve: Persistence of High Inflation and High Unemployment (Boston, Mass.: Federal Reserve Bank of Boston)

Modigliani, F. (1978) 'Discussion.' Pp. 194-200 in R.E. Lucas and T.J. Sargent (1978)

Okun, A. (1980) 'Rational Expectations with Misperceptions as a Theory of the Business Cycle.' Journal of Money, Credit and Banking 12, 816-825.

Stein, H. (1980) 'Some "supply-side" propositions.' Wall Street Journal, 19 March

Tobin, J. (1980) 'Stabilization policy ten years after.' Brookings Papers on Economic Activity 10, 19-90

Stagflation and relative-wage rates

Barry P. Bosworth

Inflation has often been described as anywhere and everywhere a monetary phenomenon. Furthermore, because the supply of money is controlled by governments, inflation can also be described as anywhere and everywhere a political phenomenon. With this brief summary many economists have washed their hands of the inflation problem and passed the buck to the politicians. Indeed, given the damage done to the public standing of economists by continued inflation, this route has much to recommend it.

A more specific explanation of the process by which monetary restraint is expected to reduce inflation, however, suggests that there may still be a role for economists. The monetary interpretation of inflation has been developed within a competitive market economy. In a competitive market, such as the one for wheat, prices are determined fully by the interaction of supply and demand. Rising prices indicate an excess of demand over supply, and the obvious answer is to reduce demand or increase supply. Similarly, in an economy that is an aggregation of competitive markets, inflation is caused by aggregate demand being in excess of supply. Since supply is the result of a demographically determined labour supply, a capital stock accumulated over decades, technology, and natural resources, it is not easy to alter in the short run and the emphasis of policy falls upon the control of demand. A second characteristic of competitive markets is that prices adjust to changes in demand or supply so that a small reduction in aggregate demand will quickly translate into a large effect on prices.

The term 'monetary restraint' should thus be understood as a euphemism for a process by which a refusal to expand the money supply in

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the face of inflation raises interest rates, reduces demand, and lowers output and employment. Increased competition for jobs and sales forces restraint in wages and prices. In effect, control over the money supply is the means by which society forces a reconciliation of the demands of everyone for more with the constraint of what is available. In a competitive economy, demands for a larger wage are limited by fears of losing one's job, and prices are limited by fears of losing sales. By controlling the size of the pool of the unemployed, government can control inflation. In fact, prolonged unemployment must be voluntary since a job could be obtained by accepting a lower wage, and no employer would refuse to accept the services of a worker whose contribution to output had a value exceeding the wage rate.

The difficulties of anti-inflation policy, however, emerge from the application of the economists' model to the real world. In many markets, prices and wages appear to be highly insensitive to variations in demand. Instead, the main effect of a reduction in demand is a decline in production and employment without the expected decline in prices and wages. Thus, the economist appears to have presented the politician with a cure, but it is a cure that does not work unless it is pushed to the point where the costs are greater than society is (or should be) willing to pay. To continue to label inflation as a monetary (and political) phenomenon simply ignores the severe social dilemma that lies behind the cure of monetary restraint.

A major theme within the economics profession over the last decade has been the integration of theories governing the behaviour of individual markets and the aggregate economy. From one perspective this is largely complete: the theory of competitive markets has been extended to a neoclassical model of the aggregate economy, with the addition of expectational lags of adjustment to account for departures of the system from full employment. Thus, within an analytical framework emphasizing expectations, inflation results because the participants anticipate that the monetary authorities will accommodate increases in the price level in the future. A solution to inflation requires a long-term commitment by government to refuse to accommodate inflation through increases in the supply of money. The unemployment costs of such a policy will remain high only until the participants in the market realize that the government means it. The problem is seen as one of making the government's policy credible, thus reducing expectations of inflation. With some qualifications this is the policy now being pursued in Great Britain.

On the other side there are those economists who believe that prices and wages reflect factors other than the interaction of demand and supply alone. Yet the construction of a theory of market behaviour as an alternative to the competitive model is an immense task, and there is, at present, a greater unity of views in opposition to the standard model than there is with respect to any coherent alternative. In addition, the incorporation of inflation expectations into the model during the 1970s provided a counter-argument to the proposition that the sluggish response of prices and wages over the business cycle was inconsistent with the competitive model. The non-monetarist school is in some theoretical disarray.

In the 1970s a renewed effort was made to enunciate a theory of market behaviour that incorporated more than inflation expectations as an explanation for the sluggish response of inflation to variations in demand. This work emphasizes several distinctions between actual markets and the competitive model: for example, the lack of an auctioneer who would match up independent offers to buy and sell, the heterogeneity of the products being sold in many markets, and the importance of long-term contracting. The result is a weakening of the immediate effects of supply and demand and a process of wage and price determination that has many elements of a bilateral monopoly.

These factors are most evident in the case of collective bargaining. Although the individual in an ideal competitive economy is pictured as choosing between the offered wage and alternatives, collective bargaining is similar to the dealings of a bilateral monopoly because the result is a group decision and the decision to reject the wage offer can also include the denial of the job to others. At the empirical level, it is reflected in the fact that wage agreements in the large unionized firms show little or no sensitivity to cyclical changes in the labour market. These tendencies are reinforced by the practice of multi-year bargaining, under which the current year's wage increase reflects economic conditions of previous years or is indexed to current rates of price inflation. Despite the disaster that has befallen the automobile industry, for example, the pattern of wage increases in that industry will continue to be dominated by a basic formula agreed to in 1948 (a cost-of-living adjustment plus a fixed annual improvement factor).

Even in the absence of collective bargaining, there are enormous variations in the characteristics of labour markets, ranging from close approximations to an auction market to highly tenured types of arrangements. Arthur Okun labelled the two extremes 'casual' and 'career' jobs. In casual jobs, employees can be used as though they were homogeneous and the job requirements can be tailored to the lowest common denominator. Without job attachments, wage-rate changes will be an active part of the adjustment of supply and demand because the employer does not value experience and expects considerable job turnover: few alternatives are available to wage-rate increases in strong markets and few inhibitions to cutting wage rates in slack markets. In career-job markets, however, the focus of employment practices shifts away from maximization of short-run advantage to a concern for longer-term stability of the employer-employee relationship. Because the employer cannot fully evaluate the quality of workers before hiring them, the emphasis is on discouraging quits and upgrading the quality of the existing work force. Employment practices in such situations have many aspects of an implicit contract between the employer and the employees as the employer seeks to adopt policies that achieve long attachments and low quit rates. During temporary or cyclical declines in demand, these firms will maintain some on-the-job underemployment and temporarily lay workers off rather than reduce wages. Such policies are substituted for additional new-hire costs in the future expansion, and it is considered that they are less damaging to the firm's reputation as a 'good' employer and thus minimize future quit rates.

It is not the purpose of this paper to delve more deeply into these issues, but rather to explore some of the implications of an economy that is a mixture of flexible-price, competitive markets and relatively 'fixed-price' markets where factors other than demand and supply dominate the determination of prices. I have focused on labour markets because the elements of bilateral monopoly are more evident. This is not to imply that labour markets are the cause of our current difficulties. Much of what I wish to argue could apply equally to product markets. But any sustained reduction in inflation must require a substantial reduction in the rate of wage increase.

IMPLICATIONS FOR INFLATION

I think this emphasis on two very different labour-market structures leads to a two-part interpretation of inflation. The first is an underlying momentum process of repetitive cycles of wage and price increases by which inflation is carried over from one period to the next. This process displays tremendous inertia and is only loosely related to overall levels of demand and supply. It is largely internal to the domestic industrial economy, where relatively fixed-price markets dominate. The second is a set of initiating forces or shocks, superimposed on top of this momentum process, that shift the inflation rate from one level to another. This list of initiating forces would include excess aggregate demand, but also price shocks that result from interruptions in major individual markets, actions of governments, and external events such as revaluation of a country's currency. In a world of competitive markets these relative-price changes could be accommodated without a rise in the average-price level. Increased money expenditures on the commodity with a higher price reduces expenditures for other goods, their demand, and thus prices. But, in practice, many industrial markets respond to reduced demand by cutting output rather than prices. The monetary authorities are left with the problem that a refusal to accommodate a rise in the average-price level translates into increased domestic unemployment.

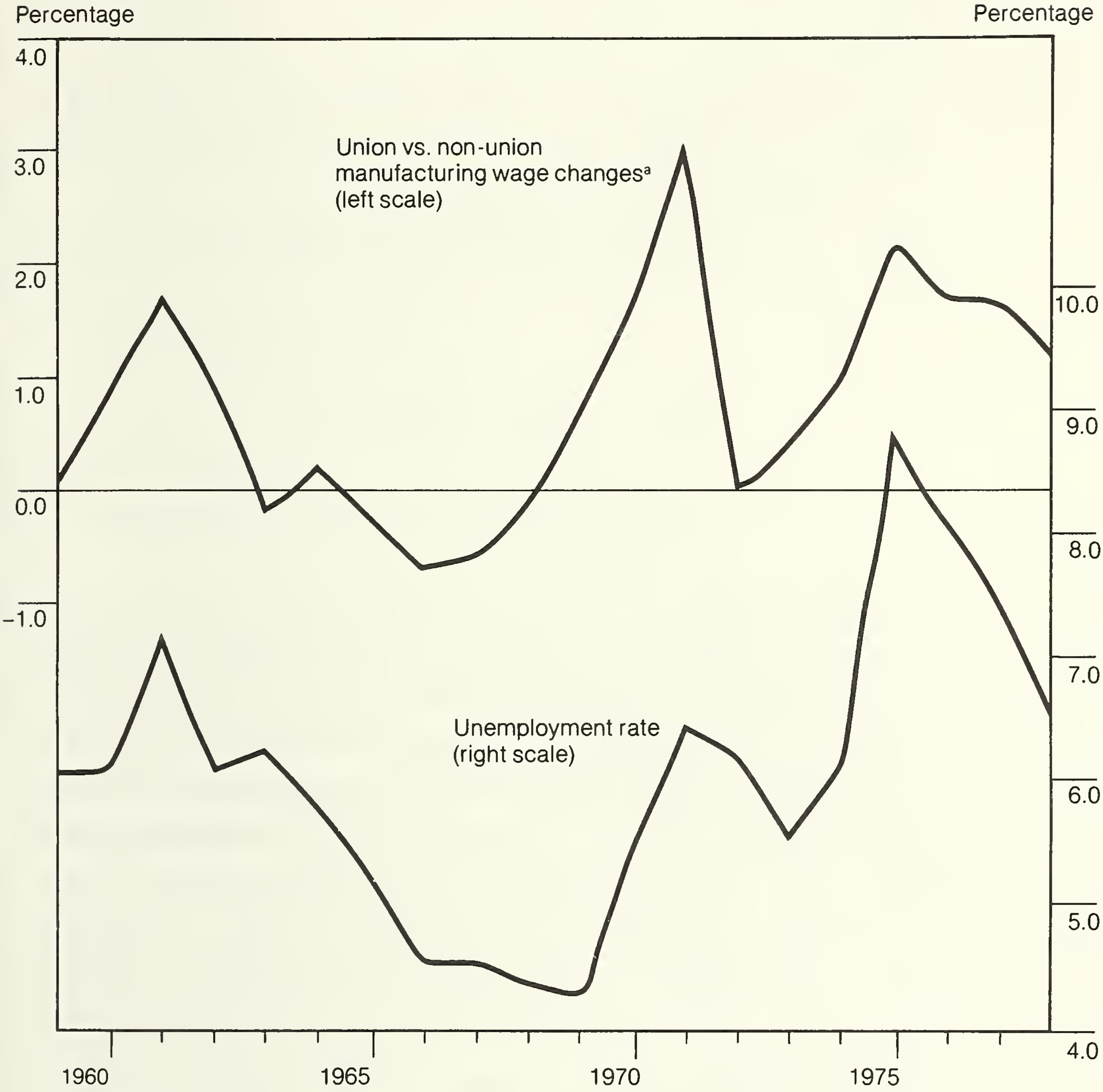
Within the simple framework I see the task of anti-inflation policy as essentially a two-part problem of developing an effective means of breaking the momentum of an inflation cycle that has built up over more than a decade; and avoiding or dampening the shocks that threaten to exacerbate the process and drive the underlying rate to even higher levels. I interpret the high inflation of the 1970s as not being primarily the result of significant changes in the structure of the economy; rather, it reflects the increased magnitude and frequency of the shocks that have affected largely unchanged institutional arrangements. Nor is it an explanation that relies upon an asymmetric response of wages and prices to those shocks. Rather the shocks themselves have been asymmetric. Government policies prevent agricultural prices from declining below the long-run costs of production to match their surges above these costs, and energy prices have gone no place but up. In this respect, the 1970s stand in sharp contrast to the 1950s and 1960s, when the costs of energy and raw materials were remarkably stable with a slight downward trend in relation to other prices.

Within this framework labour markets do not emerge as an important cause of higher inflation rates, but they are a crucial element in the process that sustains an inflation inherited from the past and passes it into the future. They are also an important part of the process by which a surge of prices in one area is spread throughout the economy as everyone seeks to catch up for past losses in real income.

Some aspects of the aggregate wage adjustment process in an economy with a mixture of competitive and 'fixed-price' markets can be illustrated with data for the United States. First, I will use data on effective wage increases for workers in large unionized establishments (more than 1000 workers) as indicative of behaviour in the fixed-price markets where elements of bilateral monopoly dominate. Such an emphasis on union settlements is frequently criticized because unionized employees constitute no more than 20 per cent of the workforce. But they constitute 25 to 30 per cent of private non-farm employees, and, because this group earns above-average wages, they account for 35 to 40 per cent of the wage bill. When account is taken of tandem-pay relationships for non-union workers in union establishments and the parallel pay relationships that companies often adopt for their union and non-union plants, their influence is even broader. In any case, I use their wage changes more as a measure of wage behaviour in markets dominated by more enduring employee-employer relationships.

Several empirical studies have found little or no relationship between wage changes in large unionized establishments and the unemployment rate - implying that most of the effect of changes in unemployment on wages will be found among the smaller unionized and non-unionized groups. At the same time, Figure 1 illustrates the very close relationship between the unemployment rate and the differential in union/non-union wage changes in manufacturing. This implies that much of the effect of higher unemployment rates is reflected in a widening of wage differentials. That is, much of the gain of a lower rate of inflation during a recession is at the expense of a widening of the structure of relative-wage rates. If the wages in the large unions (interpreted here as an index of rates in career labour markets) continue to rise independently, however, the widening relative-wage gap creates pressures for an acceleration of other

Figure 1
Union/non-union wage changes and the unemployment rate



Sources: *Economic Report of the President:* Dept. of Labor, Bureau of Labor Statistics, 'Current Wage Developments'.

[a]Annual growth rate of union wages minus annual growth rate of non-union wages.

wage increases during any subsequent expansion. Thus, the slowing of wage inflation during the recession is, in part, only a temporary phenomenon that creates pressures for a return to high inflation whenever the effort is made to return to more normal rates of unemployment. The growing disparity in wage rates will require an ever rising level of unemployment in order to maintain a constant average rate of wage income.

In a slightly more formal empirical formulation, the effective annual rate of wage change for large union establishments can be added to a regression that relates the average annual rate of wage change to the level of unemployment and past rates of price change. For the 1959-79 period the result is as follows:

$$\%\Delta AHE = 0.24 + 0.12\%\Delta CPI_{-1} + \underset{(2.3)}{4.3}\left(\frac{1}{U}\right) + \underset{(5.7)}{0.64}\ UNEF,$$

$$R^2 = 0.92,\ SE = 0.6$$

where AHE is average hourly earnings - total private, CPI is the consumer price index, U is the unemployment rate weighted for age and sex, and UNEF is the effective wage adjustments for major unions. The union wage variable accounts for a substantial proportion of the total explained variance and has a coefficient much larger than its share in the total wage bill.[1] In addition, the relative-wage relationship demonstrates little of the instability over time that plagues more conventional equations that focus on the absolute-wage change. In fact, the overall fit of the equation could be substantially improved if the construction industry with its disproportionate weight in the index could be eliminated from the union wage-rate series. In 1970-2, the construction settlements were far above the general pattern of wage increase and contributed to large errors in those years.

This distinction between two extremes of labour market behaviour leads to an alternative approach to illustrating the evolution of average wage rates over time. This is illustrated in Table 1. Effective union wage adjustments in a given year can be disaggregated into three ele-

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[1] The equation cannot be interpreted as providing any evidence about a causal spill-over of union to non-union wages. That issue was surveyed recently by Sue Vroman in 'The direction of wage spillovers in manufacturing,' a paper delivered at the Econometric Society Meeting in Denver, September 1980. The paper reflects more of an assumption that such a causal link exists.

TABLE 1
Hourly compensation changes, United States 1980 (percentages)

Type of change	Increase	Contributions[a]
Union effective wage changes		
First-year contracts	7.3	2.88
Deferred changes from pre-1980 contracts	5.1	2.63
COLAs (based on 13.3% CPI rise)	7.2	4.23
Total non-farm industry wage changes (assumes 7.5% unemployment rate)	9.2	8.84
Non-wage compensation changes (includes employment taxes and private fringe benefit programs)	-	1.00
Total change in hourly compensation	9.8	9.84

[a] Contribution to average effective increase

ments: first-year increases for contracts negotiated during the year, deferred increases called for under contracts negotiated in prior periods, and increases under cost-of-living increases in prior contracts. Weighting the increases in each category by the proportion of the union members receiving the increase yields the contribution to the average effective increase shown in the last column. An illustration of wage increases in 1980 indicates the evolution of aggregate wage change implied by this framework. The cost-of-living increases were derived from a simple equation relating them to changes in the Consumer Price Index (CPI) with a marginal recovery rate of about 60 per cent. The best predictor of first-year increases appears to be a simple autoregressive link to those of the previous year with no influence of unemployment. Deferred increases are, of course, known at the beginning of the year. The previous relative-wage equation provides a means of translating the major-union increases into an implied economy-wide wage-rate increase at various levels of unemployment. The recent historical pattern of an added one percentage point for increases in employment taxes and the rising cost of maintaining private medical and retirement programs were continued. Although the results for 1980 are in close agreement with actual wage changes through the third quarter, the table is more useful as a means of stressing the large element of the overall wage change that is independent of the current year's conditions in labour markets.

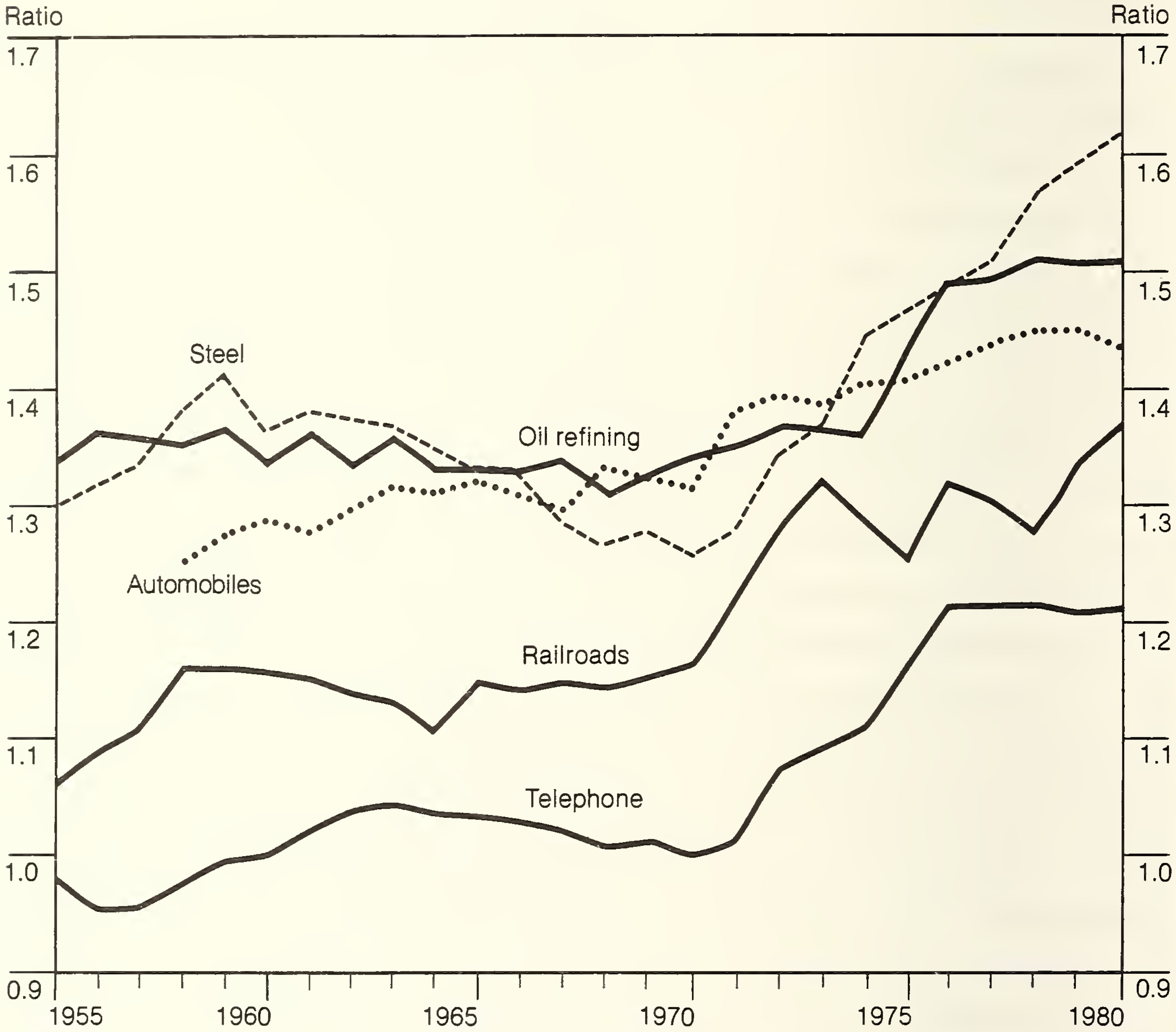
This distinction between the extremes of fixed- and flexible-price markets provides some explanation for the short-run insensitivity of wage rates to changes in labour market conditions, but leaves unexplained the question of the determinants of wage rates in the fixed-price sector. This, I believe, is a reflection of a heavy emphasis on formal and informal rules for wage adjustments as a means of avoiding continuous conflicts between employees and employers in large, impersonal establishments. This is most evident in the adoption by the automobile industry of a formal rule for wage changes that has changed very little in over thirty years: an annual productivity increment plus cost-of-living allowance. That is, it is a form of indexing but on a much broader basis than inflation alone. Throughout the 1950s and 1960s this was quite a reasonable rule and was adopted implicitly and explicitly in many other industries. As long as the productivity increment was closely related to the economy-wide average growth of productivity of 3 per cent maintained between 1948 and 1966, it simply increased these workers' wages in parallel with the rest of the economy. But two things happened to upset the balance of this relationship during the 1970s. First, the growth of productivity slowed sharply from 3 per cent to about 2 per cent annually in the 1967-73 period and to 1 per cent between 1973 and 1978, and it has actually been negative in the last two years. Second, there has been a sharp decline in the terms of trade for American industrial workers: the prices of the goods they bought increased far more rapidly than the prices of the goods they produced. This was a result of higher prices for food, energy, and land as well as the devaluation of the dollar. Thus, while the average real wage of the typical factory worker actually declined between 1969 and 1979, the real wage of workers in these key industries continued to rise in line with past trends.

The implications of this process of adhering to outdated rules is shown in Figure 2, where the relative-wage rate (compared to the average of all manufacturing) for a few major unionized industries is shown for 1955-79. While wage rate premiums show some fluctuations in earlier decades, the explosion of inflation in the early 1970s sharply raised the relative wage in these indexed sectors. In effect, these workers received compensation for a change in the terms of trade of the United States in relation to other economies. Yet all workers cannot be so compensated, and such gains can come only at the expense of other workers or a change in the distribution of income among factors of production.

The persistence of these wage rules in the face of changing economic circumstances is well illustrated by the 1979 automotive negotiations. Before the negotiation the workers' relative-wage rate had increased from a 25 per cent premium in the 1960s to 55 per cent in the late 1970s - thus, there should have been no call for a catch-up for past inflation. Unemployment was high and rising, and the industry was facing severe competition from foreign producers. The coming recession was widely predicted as was its disproportionate impact on the automotive industry. If ever competitive pressures would make a case for wage restraint, it was in the 1979 automotive negotiations. Yet the contract followed the identical historical rule of an annual productivity improvement, compensation for inflation, and maintenance of existing fringes. The total nominal increase will be 35 to 40 per cent over 3 years and will further increase the premium over other workers' wages to about 75 per cent. An even stronger case for restraint could be made in the negotiations with Chrysler, where the workers faced the imminent loss of their jobs. The only result was an agreement to postpone the increases for four months. Despite the severity of the 1980 recession, it had no effect on automotive wages, whose increases continued to be dictated by the prior years' contract. Yet the unemployment costs extended far beyond those who were party to the agreement.

The automotive industry is an extreme example. It is, however, indicative of the difficulties of using aggregate demand restraint to reduce inflation in these 'fixed-price' markets. A rule that seemed reasonable in the past as a means of avoiding continual internal conflict over wages has become unsuitable in a world of changed economic circumstances. The overall economy is, of course, a mixture of market structures. But a reduction in the average inflation rate that comes at the expense of widening wage differentials does not translate into a permanent reduction in the long-run inflation rate. Instead, there is a need to force an adaptation of the rules surrounding wage determinants in these bilateral monopoly situations in order to make them more responsive to changing economic circumstances.

Figure 2
Ratio of hourly earnings in five industries to hourly earnings in all manufacturing, United States 1955-80



Source: *Employment and Earnings* (monthly) U.S. Department of Labor, Bureau of Labor Statistics, various issues

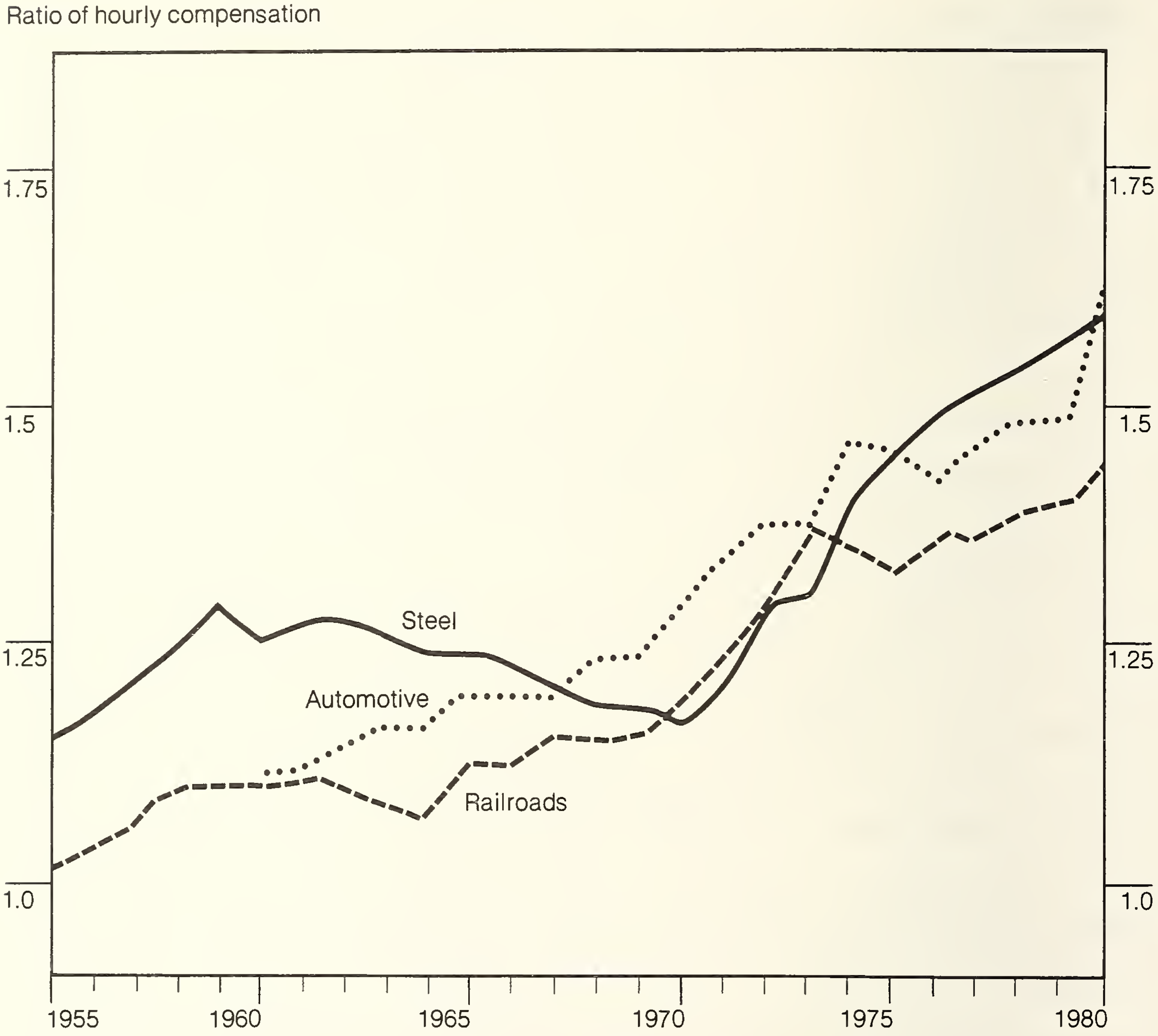
IMPLICATIONS FOR INTERNATIONAL COMPETITIVENESS

In general, an economy that has had excessive inflation in relation to its competitors will find that the depreciation of its currency can maintain its position in world markets. And certainly this has been one element in the decline in the value of the American and Canadian currencies during the last decade. Contrary to much of the public discussion, it seems to me that the U.S. economy, as a whole, is in a strong competitive position. Particularly when we remember that the OPEC surplus on trade account requires that other countries together must have a deficit, the overall trade position of the United States does not seem alarming. A general currency devaluation, however, does not offset a major shift during the 1970s in the relative positions of U.S. industries.

Although it has not attracted much attention, I believe that the sharp change in the relative-wage structure is an important element of the changing trade relationship. In effect, industries such as textiles have gained in relative competitiveness at the expense of automobiles and steel. Figure 3 graphs the relative-wage rate (inclusive of fringe benefits and employment taxes) for three industries, two of which are in competition with imports. In all three cases I believe it would be difficult to explain the changing wage structure by normal models of competitive markets: they have experienced very substantial declines in employment over the last decade. The very sharp rise in the steel industry wage rate reflects in part the effort to formulate a rule for adjusting wages for periods beyond the formal three-year contract in return for a no-strike pledge. At present, hourly employment costs in automobiles and steel are more than $18 an hour compared to about $11 an hour for all of manufacturing. This has had a double effect on automobile prices because of the importance of steel as an input.

Throughout much of the 1970s the preference of U.S. consumers for large cars served as an effective tariff against imports. Foreign producers penetrated the small-car market, but without a home market base they could not realize the economies of scale required to compete effectively in the larger-car area. The shift in consumer preferences following the rise in gasoline prices reduced this tariff and exposed the domestic industry to substantially greater competition. If the United States were a loose confederation of states, the ones affected (Michigan, Indiana, Ohio, Pennsylvania, and so on - the states where these high-wage basic industries are located) would devalue their currencies. That option is not available, and seemingly their position is becoming more similar to the traditional position of Appalachia, as labour is forced to migrate out of the region. Alternatively, the pattern of diverging relative wages could be reversed, but thus far there is no evidence of such a trend. Instead, the relative-wage premium will reach 75 to 80 per cent of

Figure 3
Hourly compensation in three industries in relation to all manufacturing (industry compensation/manufacturing compensation), United States 1955-80



Sources: *Annual Statistical Report,* American Iron and Steel Institute; Bargaining fact sheet, General Motors Corporation; *Yearbook of Railroad Facts,* Association of American Railroads; National Income and Product Accounts, Dept. of Commerce, Bureau of Economic Analysis; Unpublished figures, Dept. of Labor, Bureau of Labor Statistics, Office of Productivity and Technology.

the average manufacturing wage by the end of the current contract.

The high relative wages in autos and steel would cause no particular competitive problem if they were matched by a similar wage structure in other countries. This is not true, however. As shown in Table 2, the range of variation in relative wages is much narrower in other countries. In steel, only the Japanese wage differential is approaching that of the United States, and in automobiles no other country is close. On the basis of limited data on earnings for earlier years we also found no common trend of changing relative-wage rates in other countries similar to that of the United States. In fact, one striking aspect of the international comparisons is that the United States has a far wider distribution of relative-wage rates than other countries. Whereas industry wage rates in the United States range from 60 to 160 per cent of the manufacturing average, the range for other countries is a more narrow 80 to 125 per cent.

Obviously there are many other factors that contribute to the decline of the American auto and steel industries. Given equal access of foreign competitors to capital and technology, however, it is difficult to believe that the United States can compete when its wage rates are far above those of its competitors. It is equally important to remember, however, that this is a special problem of relative-wage rates in these industries and not a general condition of the overall economy. Their loss has been offset by the gains of other industries, such as textiles, which now find that their low relative wages improve their competitive position. Of course, although the workers in those industries have jobs, they cannot afford to buy American cars. Had it not been for the earlier insistence of the Canadian government on the assembly of large cars in Canada, this shifting of relative wages would have benefited Canadian workers as well.

In addition there are other industries, which pay high relative-wage rates, where the United States continues to enjoy offsetting technological or other competitive advantages. This would seem to be the case in aircraft, for example. At the same time, some European automotive workers are in serious difficulties without a significant shift in relative wages. The shifting wage structure in the United States, however, would suggest that simple comparisons of average-wage rates or unit labour costs among countries can be quite misleading about the underlying trends.

TABLE 2
Hourly compensation of industry's production workers in relation to all manufacturing, ten countries, 1978

Country	Ratio of hourly compensation	
	Iron & steel industry	Motor vehicles industry
United States	1.69	1.52
Canada	1.24	1.22
Belgium	1.25	1.16
Japan	1.50	1.22
Netherlands	1.23	1.05
United Kingdom	1.23	1.16
Italy	1.13	1.08
Germany	1.12	1.24
France	1.24	1.11
Sweden	1.11	1.02

SOURCE: Unpublished survey, U.S. Department of Labor, Bureau of Labor Statistics, Office of Productivity and Technology.

INTERMINGLING OF THE POLITICAL AND ECONOMIC ARENAS

The difficulties that economists face in developing models of behaviour and effective policy proposals for an economy that includes a wide spectrum of different market structures are further compounded by the need to incorporate political factors into their analysis. Yet it is important to remember that competition for relative incomes and social status is occurring in two arenas: the political and the economic. Perhaps there was a time when we could speak of the rules of the game in the economic arena as inalterable. Individuals competed in the marketplace; and even if they did not do well they accepted the outcome. Much of Western social and even religious theology emphasized acceptance of the market outcome. Today, if we do not do well in the economic arena, we regard the outcome as unfair and enter the political arena to petition for a change in the rules of the game. If we are doing well under the rules, we condemn such efforts as an outrage; if we are not, we view such changes as too long delayed.

This intermingling of the political and economic arenas, however, does intensify the problems of the traditional policies in controlling inflation. If an industry feels threatened by competition in the market, it now has the second option of intervening in the political arena in order to change the rules rather than amending its own price and wage actions. For example, it is clear that in the steel industry both labour and management have perceived that their best response to increased foreign competition is to petition in the political arena for trade protection rather than to alter their own upward spiral of wage and price increases. In order to avoid direct conflict, the firm agrees to a 'fair' wage increase (namely something a little larger than what the average worker gets) in return for assurances from the union that its competitors will pay the same. They then join together in a march on Washington to protest 'unfair' foreign competition - unfair being any price below their own.

As economists we assume that the response to policy changes will be according to unchanging rules of the game. But, just as advocates of rational expectations emphasize that participants will probably incorporate policy responses into their decisions, so too we can expect that policy changes will set pressures in motion to change the rules; and that these rule changes will frequently exacerbate the basic problems the policy seeks to address. Despite economists' distaste for equity concerns, they - rather than efficiency - have become the dominant concern of many of the participants.

OUTLOOK FOR THE 1980s

A focus on a dual labour market where one sector's wages continue to be determined by an outdated wage rule would seem to imply a pessimistic outlook for the American economy. The growing disparity in the wage structure will add catch-up pressures to the inflation process. While we cannot fully explain the decline in productivity growth that occurred during the 1970s, there is no particular reason to expect a significant improvement in the early 1980s. In addition, further declines in the terms of trade of industrial workers as a result of higher prices for energy, food, and housing are equally likely to occur.

I attach great importance to both productivity growth and the terms of trade because they are the fundamental determinants of the growth of per-capita real income. This link to real incomes was not fully evident during the 1970s because of several offsetting trends in other areas. Although the real wage of the average factory worker did not rise between 1969 and 1979, real family income continued to grow at a rapid pace. This was made possible, first, by a rapid increase in the number of dual-income-earning families as women entered the labour force in large numbers and found jobs. The demographic trends will be much weaker in the next decade, and in the face of double-digit inflation, monetary policy is unlikely to finance a rapid growth in job opportunities. Second, although the last decade saw a moderation of real-wage growth, there was a sharp acceleration of transfer payments to individuals. This was accomplished without an offsetting increase in taxes by reducing defence expenditures from 40 or 45 per cent of the budget to 20 or 25 per cent. This reallocation of budget resources cannot be repeated in the 1980s; and, in fact, the defence share is likely to rise.

Thus, the problem is becoming, not just one of inflation, but inflation plus declining real income. To a substantial extent this additional complication has been evident in the last two years. While the general inflation did accelerate, the rise in price inflation was far greater than that for wages: real wages fell. The public discussion has identified this as an inflation problem when, in fact, it is more closely related to declines in productivity and the terms of trade.

A sharp slowdown in the growth of average real income is likely to intensify the struggle over relative income shares and increase the social and political conflict. This is a particular problem for the United States because of the large number of disparate social, ethnic, and economic groups. It will intensify the inflation pressures by increasing the difficulty of inducing groups to accept restraint in the face of falling or stagnant real incomes.

If, at the same time, the high-wage, large-enterprise sectors of the American economy continue to adhere to the old rules for negotiating wages, the inequity of the wage distribution will increase and require ever-rising unemployment to restrain wage rates in the more competitive sectors.

Certainly there are competitive restraints on this process. The sharp shift toward non-union labour after the large union-wage gains in construction in the early 1970s is one example. The union crafts did succeed in pricing themselves out of the market. But these competitive adjustments work very slowly. They are also dependent on the assumption that the industries subject to increasing competitive restraints are not able to obtain relief by petitioning the political arena for a change in the rules of the game. Recent actions to extend various forms of government protection to the automobile and steel industries are not encouraging in this regard.

This dismal picture is not intended to be a forecast of the future, but it does seem to me to be a reasonable outline of some of the forces that will be operating on U.S. labour markets during the 1980s. The disparate pattern of change in relative wages is a cause for concern; it is likely to be worsened rather than helped by a long-drawn-out episode of aggregate demand restraint, and other actions of government appear to encourage rather than discourage its continuation.

In an attempt to respond to the inequities and extremes of the purely competitive economy, Western countries have adopted major institutional reforms. These actions have been highly successful in establishing a more equitable and humane economic system. But these gains have been achieved largely by giving individuals and groups more control or discretion over the economic environment in which they operate. We now face the problem of inducing these groups to exercise some restraint, to pursue their special interest with some concern for the general interest. A competitive economy achieved that restraint through the threat of lost jobs or lost sales. Today, in many situations the perception of a link between one's wage or prices and one's job has been greatly weakened. And government policies of regulating the pool of the unemployed have become a highly inefficient means of restraining inflation.

As economists we present the political leaders with a dilemma in that we prescribe no means of breaking the momentum of the inflation without extremely high costs in terms of unemployment. While a few countries have been able to avoid the conflict by shifting the burden of unemployment onto foreign workers whom they then ship home, such an option is not available to most industrial societies. With respect to the shocks, we do see an increased emphasis upon the need to avoid episodes of excess demand, but we have abandoned many of the policies of price stabilization in primary commodity markets - principally the holding of reserve stocks - and the formation of OPEC has drastically altered the structure of the world oil market. Thus, we begin the 1980s with a built-in inflation rate of 10 per cent and a continuing vulnerability to the same type of shocks that proved so disruptive in the last decade.

Carl E. Beigie

Professor Bosworth started in macro and went to micro. My training was in industrial organization, and to discuss the inflation problem for me is working from the micro to the macro, which is the other way around.

The paper that Professor Bosworth has written and the one he commented on today were descriptive, analytical, and predictive. I am going to make a few comments on those aspects of his remarks, but I am also going to move into the prescriptive side.

Professor Bosworth has described a situation that in industrial organization is quite comparable to the administered price system, except that he has taken it into administered wages. I am a great believer in the continuation of inflation, not for the normal macro reasons, but because of the resistance to relative-price changes that correspond to the kinds of structural changes that have taken place in all major countries, be they exporters or importers of energy. The message from the U.S. experience is that relative-price changes have occurred, but they have been in the wrong direction; i.e. they have not worked as a resistance or adjustment to structural change, but have become a structural change problem themselves.

Since the paper was given from an almost exclusively U.S. perspective, there are a couple of things in the Canadian experience that are important to point out, but that does not invalidate the analysis. I think the analysis is applicable to both countries, and that the messages were extremely important for Canadian analysis, but there are a couple of differences. The first point: 1981 in Canada is not an easy bargaining year; in fact, it has a very heavy collective negotiating calendar, and this is going to create some real tensions and conflicts, given the kind of situation that 1981 appears to present.

A second fact that I think is particularly important as a basis for differentiating the Canadian and U.S. experiences is that, whereas the U.S. experience has been one of declining terms of trade over the past decade, in Canada, which is a much more heavily resource-oriented economy, the terms of trade have been essentially positive. We have got into the mess we are in, which is not very different from the mess the United States is in, despite the fact that we have had the benefit of an increase in our terms of trade.

The third difference I would point out is between the public sector/ private sector situation here and in the United States. I think this is one of the most important aspects of labour markets that have to be kept in perspective.

My fourth point is of fundamental importance, and it concerns what I have always regarded as something that has been largely overlooked in contemporary economics. It is not just the institutional but the behavioural side of economics that in the post-war period has tended to be downplayed. What Dr Bosworth has pointed out with respect to the automobile industry is a 100 per cent accurate. The main difference is that in Canada we are all like the automobile industry. Not only that, but the government in its wisdom has sanctioned this as the ultimate definition of fairness and equity, and I refer specifically to the Anti-Inflation Board program. The program has precisely written large the automobile pattern of wage determination.

The Anti-Inflation Board program, which was put into effect in 1975 and was kept for three years, was, by its very structure, not really geared to serve the purpose that many of us thought temporary controls might serve. We had in the Anti-Inflation Board essentially a validation, with a one-year lag, of all past inflation over this period; in other words, the starting point was that full catch-up for inflation with a one-year lag was given as a base for fairness and equity. We also had, as in the auto industry, the historical productivity performance. The productivity performance in Canada over the past twenty years, which was about 2 per cent, was taken as a fair adjustment, and anybody who got less than that could claim that he was being treated unfairly and inequitably. We also had a catch-up provision for people who before the wage and price controls had fallen behind the inflation record. What we have then is a much worse problem than in the United States, because we have the whole country on exactly this fully indexed wage pattern, and that was a very perceptive way of putting it. Dr Bosworth's paper has explained why this appears fair and reasonable, but when you stop and think about it, when you do not have any other method for sharing difficulties, the basic policy of trying to maintain the status quo leads to very difficult problems.

To slip briefly into the prescriptive side, we are going to have to do something about the full-indexation mentality. I do not know how we do it or whether you can do it, but I do feel that it is important to get across the point that in terms of the energy side of the inflation problem it is essential at least to make sure that the public understands it is impossible for everybody and all forms of income to be fully compensated for the rise in the relative cost. I emphasize the cost side of the energy picture. There is a lot more, such as the impact of changes in the exchange rate on what is happening to the ability of society as a whole to compensate for changes in inflation. There is even the impact of changes in the interest rate in terms of what it is appropriate to expect to be able to compensate everybody for; some of these changes are relatively cyclical, although not in the short run.

What really raises questions in a lot of minds, as people look into the future, is whether or not these shocks that we talked about last night and this morning are dampening. Many of the shocks are, and as long as we allow any adjustment whatsoever in the system, there will be an opportunity through a variety of market-place adjustments to dampen the eventual impact of that shock. But if, as is my feeling, we are moving into an era on the energy side where we are faced with a long-run cost curve or supply curve that is upward sloping, we have a great deal of difficulty assuming that that kind of shock is going to be dampening over time.

My main message is that in Canada - and it is not simply, or even largely, contrary to what it becomes politically convenient to point to - it is not OPEC that is largely causing the problem of structural change, which we are doing our best to resist and add to as a problem. The Ontario Economic Council has pointed out a number of these things. The one that I would emphasize concerns how the marketing production of agricultural products is affecting the problem of structural change. It is very clear that the Minister of Agriculture has tried over the years to increase the relative share of the agricultural sector. Fine and dandy. I am not against farmers. But I am waiting, and I think the economy is waiting, for a voluntary reduction in somebody else's share to finance the increased share of the agricultural sector, or even of the whole public service sector, which also wants to have an increase in relative position. This means somebody has to be prepared to take a reduction in a relative position, and the resistance to that, which we have so heavily institutionalized into the system, means that the way the adjustment takes place is through a rationing type of adjustment mechanism that does not lead to a dampening at all.

What we have, in Canada - and I do not think it is all that different in the United States - is a situation where we are extremely vulnerable to a period of slow growth. In the past we had a convenient mechanism for sharing the costs of structural change, and that mechanism was the growth process. We moved up with differential rates; we are now in a period of slow growth in which we have to move down differentially to achieve the kinds of relative adjustments that are necessary.

What I see as the situation in this country and, if Mr Volcker continues with his policies, in the United States to a somewhat different degree, and in the United Kingdom if Mrs Thatcher continues with her policies - is that we are essentially relying on monetary restraints to cure what is not a monetary phenomenon, namely a relative-price change as a response to fairly significant structural changes. So what you have is reliance on a very crude instrument, namely monetary restaints, to deal with the problems of the Canadian and, in fact, the entire industrialized world's overall difficulty.

Now what this leads to, I am afraid, as I look at it in the Canadian outlook - and this is where I turn to the more prescriptive side - is that, given the kind of cross-pressures that the budget is going to impose on us next year and given the heavy calendar of wage bargaining, the base is being set again for a resort to controls as the way of trying to resolve our problems. In 1975 I felt that some kind of exercise in this morass was probably the least unattractive of a variety of very unattractive alternatives. But I do not think controls of the kind that people talk about to-day would really achieve anything in the long term. On the basis of the two papers I have heard so far in this conference, I think there is a tendency to say there is nothing we can do. Well, I am one of those economists who finds that a rather hopeless attitude and frankly I don't see what you gain from higher unemployment - I am not a big fan of unemployment, and the 'solutions' that we will get to our problems through the kind of unemployment we are likely to tolerate politically are going to be very meagre; and frankly, after five years of this policy, I think the results we have achieved deserve some very serious questioning and challenging.

Yesterday in a talk to the Canadian Tax Foundation, I tried to put forward an alternative to the kind of policy that Canada has, in recognition of exactly the kind of problems that Dr Bosworth has mentioned.

I do not think that monetary restraint of the kind we are practising in Canada is conducive to the kinds of adjustments we really want. I feel that it is time to give serious consideration to something other than the financial crowding-out phenomenon that most of us talk about, and to get off what I think is a totally illusive concept to measure, then to implement control over M1 as the key determinant of money supply, and then to think seriously about a real-interest-rate approach to monetary policy. Only with that approach can you get a link between the financial-sector approach and the real-sector approach. Basically what I think is appropriate is to move to a real-interest-rate premium at all times, because when interest rates fall below the inflation rate it creates even further disequilibriums in the future; but a real-interest-rate approach, in which we had a real-interest-rate premium would avoid these difficulties.

The second approach that we are going to have to try and deal with is to make the exchange rate indeed flexible. We do not have a flexible exchange rate policy in Canada: I think that there is a serious problem here. I see the need to let that exchange rate fall if it has to in a period like this, and rise when we have excess demand in the system. Over time I do see a point in trying to keep the exchange rate from rising to the point where it would really hurt the long-term competitiveness of the manufacturing industry.

I think we have to get off full indexation - I feel very strongly about that - but on the other hand I think we have to stop allowing mergers and acquisitions and even actively encouraging them through the tax structure. These mergers and acquisitions do nothing more than use scarce credit to bid up the price of existing assets.

I might make a very similar comment about the way we are going about the Canadianization program, whose objective I fully share; the mechanism serves mainly to increase inflation, to pay for it by regressive taxes, and mainly to increase the price of existing assets without increasing any long-term supply for the self-sufficiency objective.

Finally I think my real message on the prescriptive side is that we are going to have to adopt more innovative uses of fiscal policy.

The first thing I would point out is that I do not share the view that is wide-spread among the business community that we are in an absolutely chaotic situation because we have a fiscal deficit of $15 billion at the federal level. The economics profession is going to have to state more loudly why the overall stance of the federal and the combined federal, provincial, and municipal deficit is the real issue. It is fairly easy to take account, in terms of assessing the so-called excessively stimulative federal budget, of what the taxes and expenditures of government are under conditions of high employment and low inflation. Account should also be taken of the fact that we now, as a result of the October budget, have a planned elimination over the next two years of the net budgetary impact of the oil-import compensation program.

Our overall fiscal policy in Canada does create room for the use of fiscal policy through an innovative mechanism, to try to deal with some of the structural problems. Specifically what I think has to be done is to try to invest into the structural problems that Canada has. Dr Bosworth has suggested that structural change on the labour side is one part of the problem. I agree, but I do not think you are going to persuade labour not to think that what is fair is fair. What you can do is to try to take a fiscal approach, to stimulate into those industries in which you have serious structural problems leading to above-average increases in cost.

In order to do this my suggestion runs into two problems. I think what you need is an incentive policy in investment that is geared toward structural problems. But we have to get performance tests to insure that there is not only new stimulus, but existing stimulus - and there is massive stimulus to the investment side in this country, but without serious performance tests to justify it. In other words, we have to have some performance criteria against which to judge the incentives we are giving to investment, and which have not proved all that successful.

This creates two problems. First, this kind of approach in the labour literature, at least in the political use of this term, sounds like a trickle-down theory. It is! There's no question about it. It basically says that stimulus to investment has to lead to consumption increases indirectly, rather than directly. This suggests to me that the Reagan policy of both a consumption and an investment tax cut-back could lead to some problems.

The other problem is planning. We have serious difficulties on the micro side that are going to require some planning. If we duck that word and refuse to talk about the need for a variety of governmental policies to deal with the market imperfections, we are evading the fundamental issue.

The question then ultimately becomes whether we can find a government that knows how to plan effectively.

Discussion

QUESTION: A question to Dr Bosworth. As regards your analysis of the inappropriate bargaining procedures in these industries, will that lead, or is it leading, to pressure to consider the European practice of putting workers on boards with management? Carl Beigie mentioned the possibility of investment resource controls for Canada; is that also a possibility in the United States, given the rather dreary note which Dr Bosworth ended on about the prospects for inflation in the next few years?

BARRY BOSWORTH: In reply to your question whether there is pressure to go to worker boards in the United States - no, there is some discussion about that but only among intellectuals. I think the fact that the UAW has somebody on the board of Chrysler is more an accidental result of the specific discussions that went on with that company at the time and is not considered something the UAW wants to have in other companies; in fact I suspect that Mr Fraser would like to get off the board because he probably doesn't like to sit around talking about the dismal state of Chrysler any more than the other board members do.

The question is asked again and again in the United States why, if all these shocks and people's attempts to try to keep up with increases in terms of trade, or inflation, have caused the problem in the United States, why haven't they in Germany? Germans are always saying you have to have fiscal and monetary restraint when they go to the States and talk to us about it. But it's striking that when you look at Germany you wouldn't call their budget fiscal restraint and you wouldn't call their money supply monetary restraint. They did have an episode of severe aggregate demand restraint in the mid 1970s that seems to have been induced more by the appreciation in the exchange rate than by fiscal or monetary policies. It seems to me that the German trade-off with respect to unemployment and inflation over the first couple of years was about the same as in the United States and Switzerland. Switzerland is probably the best example:

the Swiss got their inflation under control by adding aggregate demand restraint. They had an unemployment cost to that: they unemployed 10 per cent of their work force and shipped them out of the country. If the United States could do the same thing, it would be very effective.

But what I am looking at instead is whether that was the first step that Germany and Switzerland took to get their inflation rate down. There were two other things that they did. One, which I would certainly not recommend to the United States, is that in a world of flexible exchange rates he who talks toughest about inflation is likely to be most successful because, if everybody believes your rhetoric, capital will flow into your country, your exchange rate will appreciate, and the cost of your imports will go down. This was very effective: in Germany it improved their terms of trade, and in Switzerland it did a great deal to lower their inflation rate. It does mean that Switzerland now has a comparative advantage only in the production of Swiss francs, and the manufacturing industry is ceasing to exist, but there are other things those countries did that could have some applications to the United States. In Germany they passed a law banning all cost-of-living escalator clauses and all multi-year labour negotiations.

In addition, despite the fact that they keep saying they haven't any incomes policy, the German government sits down with a business and labour council at the beginning of every year and talks over the economic conditions, what they are willing to finance by way of inflation, and the monetary and fiscal policy. I think this has the possibility of a lot of application for the United States. By going to short labour agreements you force the participants to focus on current economic conditions in making decisions about wages and prices. I think in 1979 for example in the automobile industry, a lot of people didn't really believe a recession was going to occur. The President of the United States and the Chairman of the Federal Reserve Board were both saying in speeches, 'We are going to have a recession to stop inflation, but it won't last very long and if a few of you are damaged I will take care of you.' In that atmosphere why would you say that you ought to change your way of life - and people didn't. Then you go into the 1980s, and the economic projections are to some extent realized, but now you are under an existing contract. I think if they had had the right to re-negotiate in 1980 they would not have done what they did; there wouldn't have been a 20 per cent increase in the automobile industry. Moderating wages today because of what some may view as a temporary problem may seem to imply that you will lose forever; but the answer could be that, if you think this industry is going to recover, wait till next year and see if that actually happens; let's focus on our problems of today.

I think one thing that is worth discussing is the possibility of following the Germans in saying that long-term contracting is not possible in an economy in which external conditions are changing economic conditions so rapidly and that we ought instead to go to a shorter contracting period.

In the last part of the question on controls, no, I think there is no likelihood that the United States will go to controls in the next two years. Perhaps having a Republican administration makes the possibility of controls a little more likely because it's a little like Richard Nixon recognizing Red China, but, as Mr Beigie said, the problems with the U.S. inflation have a lot to do with getting different groups to change the way they negotiate their wages and their prices. I think it is a problem on the price side as much as the wage, and the Republican party is not well suited to dealing with that. Another phenomenon of U.S. politics is that after a candidate has campaigned for president for a whole year he comes to believe his own rhetoric; then he deserves an opportunity to give it a try, and it takes at least two years to give it a fair test; at the the end of two years when it has failed he no longer has enough public credibility to be able to do anything any more and besides you've got another election coming up. It seems to me that the period of dealing with these problems will inevitably be one of tremendous chaos, conflict, and substantial losses to individual groups. A president in a four-year term will want to concentrate that in the first two years of his term, not in the last two, as Mr Carter found out. But the way the political system operates I don't think we are moving to controls; we are still searching for the villains, and we are going to continue to search for the villains for a few more years rather than trying to do anything about it.

QUESTION: I want to direct this question to Dr Beigie. You have an interest rate approach to monetary policy, but you also have shown your objection to full indexation. Can you reconcile the two? When you talk about a good interest rate approach, do you have in mind some kind of indexation or interest premium?

CARL BEIGIE: The first point is that there are some things where I think indexation is worthwhile and that would be on the capital side. More importantly, as John Bossons pointed out yesterday, my view of indexation applies on the income side, not on the taxation side; in fact we are suffering from a rather schizophrenic approach to indexation for taxation purposes, and rather than completely eliminate that it seems to me that there is some real gain on the indexation side there.

In terms of computing the real interest rates, it does seem to me that it's got to be the whole - I don't know whether it's CPI - I don't like CPI - but some link to the GNP deflator for example. Now I don't see how, given the kind of adjustments that have to take place, that you can use less than a full representation of the overall inflation rate. If you give people incentives, which we give heavily through the tax system by the way, to borrow money for the purpose of getting anything that is a hedge against inflation, it does not necessarily mean that there will be an expansion of output from the use of the funds. When we create an incentive for people to borrow money because they are reasonably convinced that the real cost of repaying that borrowing will be less than what it cost to get it, that we've got a disequilibrium in the economy that has to be adjusted.

Frankly if you took the full measure of the inflation expectations in the United States and Canada in recent years, interest rates were far too low. That is one of the reasons why, when Mr Volper came in and really put the screws on, the interest rate had to rise quite quickly, in part at least, to make up for the fact that we had been living with a relatively low interest rate.

QUESTION: This question can go to both people. I am interested in Dr Bosworth's table showing us the relative hourly compensation for the country. Now if you look at the United States and Canada you find there are sharp differences in both the iron and steel and the motor vehicle industries. In iron and steel we have the same unions as the States, and in the motor vehicle industry we have both the same companies and the same unions. Now Carl has suggested an explanation for this; he says we have not only screwed up those two industries but we have done it all across the board. Now if that is the case, Carl, why is it that we only have 10 per cent inflation and so does the States? We should have much higher inflation. And Dr Bosworth, does that suggest that you agree with Carl? Does that apply to the other countries, to the UK and the Netherlands? They have indeed done that, and are there other countries that have done the same as we have in Canada, and not had the income distribution problem between those particular industries?

CARL BEIGIE: I think on the Canadian side this is a ratio, so you not only have the numerator but the denominator, and as it's not the overall average, it has not performed all that well in relation to the CIP. I don't want to give the impression that labour has somehow had a complete offset to the real phenomenon; the average wages have been below the full inflation rate for the last couple of years. On the other hand I think that the description of this in the paper was pretty good: there is a downward inflexibility in the bargaining in the steel and auto industies; wages don't go down as fast but there is recognition of resistence to going above. This is not always true in some public service sectors.

BARRY BOSWORTH: There are a couple of things that I would say. First, remember that the wage rates in this table are relative-wage rates. It is not meant to be a comparison of wage rates in Canada and the United States. It's a wage rate distribution, and what I have tried to show is that the most striking thing about the U.S. economy compared to any other I can find is that the distribution of relative wages in the United States is far wider than in other countries. Other countries tend to have a distribution of a low wage rate of 80 per cent of the manufacturing average and a high wage rate of 125 or 130. The United States runs from 60 per cent of the average wage rate, with a lot of people down there, all the way up to 160 and 170 per cent, with a lot of people in autos, steel, trucking, and railroads up there. An article that casts some light on this is one by Jeffrey Sacks in the Brookings papers, in which he tries to compare different countries' behaviour during the seventies. He pointed out that the United States is the only major industrial country that he thinks has done what has to be done: we have had a decline in real wages; other countries have had a continued growth in real wages; they are so to speak completely indexed. I think in part it is right, as Dr Beigie says, that the phenomenon of the U.S. automobile and steel industries is unique in the United States; we still have a lot of competitive labour markets. When we had aggregate demand restraint, the wage increases in those industries were moderate. In other countries all industries move together and then the effect shows up in the exchange rate: you just devalue or appreciate your currency for any differences in inflation rates. The United States just has a more diverse labour market structure that pulls these things apart: that creates most of the difficulty.

QUESTION: I am interested in Carl Beigie's real interest rate argument. My first question is - real interest rate on what particular industry? The second question is, whatever instrument you choose, what do you think the real interest rate ought to be today if you don't know what kind of mechanism you propose for deciding what it ought to be?

CARL BEIGIE: The same mechanism I decide between M1, M2, and M3. The principle that I am putting forward is more important than the specifics. I am by no means an expert on financial market structures in terms of the interest rate. The fact of the matter is that we have moved into a period where investment savings in relation to consumption has probably got to be emphasized. I'll pick an order of magnitude at 4 per cent for a representative market rate. Now short-term rates are going to fluctuate much more than that, but if you pick a centralizing tendency type of rate, the mechanism for achieving it is going to be very difficult; I admit that the implementation of this is going to be extremely difficult, but the mechanism of picking a monetary aggregate approach is also leading to tremendous difficulties. It seems to me that one of the difficulties in the monetarists' approach to monetary policy is the notion of what the appropriate stance of monetary policy should be when you also have, as we have today, a credit crowding-out that is created by the fiscal deficit. I think it's time to start critically evaluating the idea that a steady reduction in the M1 growth rate is a magic solution for everything - I'm very sceptical about that.

QUESTION: My general response is that financial markets are still one of the few markets that work as markets: there are and sellers, bids and asks, and a price that comes out of that process. What I am hearing is that you want to take that away too.

DR. BEIGIE: No, I don't agree that that market works independently of what the Bank of Canada does in its attempts to control monetary aggregates.

QUESTION: Dr. Bosworth, I am very interested in your analysis of the relative-wage rate change. I'd like to translate it into the future; you seem to have allowed two possibilities for a number of key industries in the United States, and by implication North America: either those industries cease to exist, i.e. their employment keeps on declining and their unions, in their bargaining, ignore this until the industries disappear; or they become non-traded goods like construction or certain services; that is, walls of protectionism go up around them. Would you comment on which possibility is most likely in the next five to ten years?

DR. BOSWORTH: When I left the government I still thought there was a third option, which is that these parties could come to realize that the world has changed, that the competitive position they find themselves in is different, and that they could have been brought to understand this and the need to break what seems to be a perfectly reasonable and fair rule in the past that avoided conflict. In large, impersonal groups they are always going to try to do that; it's like signing a treaty between nations that found it reasonable at the time it was signed. I guess the same thing happened at SALT too, but the difficulty is that the government policies that directed the industry were unwilling to put the pressure on the parties to recognize that the situation had changed. For example, perhaps bailing out Chrysler was something that for social reasons you have to do. If Chrysler folds, the City of Detroit and south-eastern Michigan become a wasteland. But why didn't the government say, 'We will do something for you, but you must change your behaviour.'? I think the time was right a year ago. By sitting down with those parties and making more issue of relative wages and some of the mistakes made by the companies, you could have got them to do something. I don't see any difference in resources between the United States and Japan that says the United States should not be able to produce automobiles. There are a lot of advantages in being close to the market, from a resource point of view. In the United States it's simply because the industry insists on pricing itself out of the market. Why can't you change that behaviour? It seems to me that is unlikely to change because the government is allowing the impression to grow that somehow the industry's problems are due to government regulation or unfair foreign competition and it will take measures in both cases: therefore the rule won't change.

There are still two opportunities: one, Chrysler's K car is not selling, and therefore the government bail-out is not big enough to save Chrysler, and it's going to have to go back next year. The government has poured $2 billion down the drain, and now the question is going to be whether or not to put up more money. Maybe at that time they will sit down with the industry and as a condition of extending their aid require that the labour contract be broken and re-written and some new produres instituted on the management side as well.

There is another possibility: maybe they will live through to the next labour negotiations and then in those negotiations maybe the behaviour will change again. But I would say there are three options: first, you lower the relative-wage rate in the automobile industry to where it used to be and they would have a fighting chance to make it. Other things have gone wrong in the industry, but I think relative-wage rates are a great part of them.

Secondly Chrysler could disappear. I think the most likely outcome is a combination of your hypothesis that they will disappear and the second one that they will become a non-traded good. I think that the industry will continue to shrink, but there are trade barriers to limit the rate of decline; that's the most likely outcome unfortunately. But the myth that a new, improved K car is going to turn things around doesn't seem logical in light of the nature of the industry's problems. They say they can't compete on quality; you can always compete on quality if you can afford to have enough quality checks. You can't afford it in these plants; so quality is just where the competitive problem is emerging, and the quality is low because they have to shave the costs and they can't afford the labour costs to maintain the quality of the car. So that's another way in which price competition emerges.

QUESTION: Barry, I don't really disagree about negotiating with Chrysler and bailing it out, but this chart is such a rich source of statistics that I'm fascinated with it. For example in the iron and steel industry the ratio in the United States is 1.69, and Japan is 1.50, which is very close to the United States. Yet the Japanese have been much more successful in the steel industry than the United States; so I am not sure whether this is an explanation. I realize that you have just said that this doesn't fully explain everything.

Another point. I would caution against using these numbers to explain the overall rate of inflation. For example in Italy, which has the worst problem, these numbers are relatively stable, 1.13 and 1.08. The UK also has numbers relatively close to one; so it seems to me these numbers could be used by a monetarist to say that, desite the fact that the United States has all kinds of structural problems as revealed by these numbers, you cannot really explain the rate of inflation by these micro problems.

BARRY BOSWORTH: No, this table has absolutely nothing to do with any inflation argument; it has to do with the issue of comparative advantage and the fact that there has been a big change in relative-wage rates in the United States, which would imply that there was a deterioration in the competitive position of the U.S. auto and steel industries. A counter argument is that that is not true if the same trend has been evident in other countries; well unfortunately I can't get compensation on a trend basis; I could get earnings, but there is no similar trend in other countries, there is no trend at all that relative-wage differentials appear to be widening on an earnings basis. I said in my paper that when we looked at earnings data this pulling apart of the relative-wage structure is not occurring in other countries. There is one industry, steel, and one country, Japan, in which the ratio is comparable to the U.S. It's up to 1.5, and that differential has been maintained for a long time. The Japanese steel industry for some reason has been completely out of line with the rest of the Japanese economy for a long time, not widening or narrowing. It's very high, and you ask why the Japanese steel industry does so well competitively. Somebody named Bob Crandle has written a book at Brookings on the U.S. competitive position in the steel industry. I think there are two things that account for it. One is that Japan took advantage of the post-war revolution in ocean freight rates just when the bottom went out of the market. They built steel plants in deep-water ports, and their market is one hundred miles inland in every country in the world. You can now move steel from Tokyo to New York City more cheaply than from Pittsburgh to New York City. What really accounts for most of their trade advantage is the fact that the U.S. markets were structured for railroad and lake freight. Because of the transportation revolution, you can move iron ore and coal and steel back the other way by ocean freight very cheaply. Japan built deep-water ports, and then took advantage of the economies of scale in iron and steel production, which are still enormous, and built plants of a size that the United States can't possibly build, because if we tried to build a plant that big and moved steel by freight or rail, which is the way we would have to distribute within our own markets, the transportation costs would kill us. The market has to be too big to accommodate the plants. Japan is able to build big plants because the market through ocean freight is very large.

There is a third factor that explains some of Japan's success. In the United States one of the biggest sources of productivity decline is the capital goods industry, namely the construction industry. We always think that the United States is very rich in capital, and in a financial sense it is, but for it to be useful you have got to have a way to translate it into physical capital; and the U.S. industry is so fantastically inefficient, apparently, at translating financial capital into physical capital that by the time you get it into physical capital it's really very expensive. One example in steel is that if you think the United States is in a bad competitive position today, wait and see what happens when it tries to modernize, because the only way it can compete today is that it has depreciated its capital stock and it has no capital costs. If it built a new plant at $1500 a ton and then applied the capital charges on the price of steel, the competitive disadvantages would widen rather than narrow in comparison with the Japanese. How does this show up in the construction problem? The capital costs to the United States of building a steel plant like the ones in Japan are about two to three times higher. They built a steel plant and a blast furnace in Japan in eighteen months; we did the same thing in Maryland, and it took us eight years, and it still doesn't work right. I think that is another part of it. No, I am not using it to explain inflation; I am just saying that it really goes back to a point Jeffrey Sacks was making. In economies other than the United States their domestic inflation has been fully indexed, and he says in the United States it hasn't. He says the United States has had a decline in real wages - we've made the adjustment in the terms of trade. My only point is that we haven't. The U.S. textile industry has made the adjustment to the change of terms of trade, but the U.S. automobile and steel industries have gone the other way. The average U.S. real wage has declined, which implies that the United States is in an improving competitive position. The trouble is that that's true for some industries and the opposite is true for other industries. The historical import-competing exporting industries are exactly the ones for which this hasn't occurred. It has occurred for our low-wage industries in relation to our high-wage industries. It's pulled the wage distribution all apart and is going to cause a lot of increased social problems for the United States because of all the wage disparities that have developed.

Stagflation consequences of the Canadian tax/transfer system

Douglas G. Hartle, Samuel Rea, Gregory V. Jump, and John Bossons

The purpose of this paper is to describe some ways in which the Canadian tax and transfer system contributes to stagflationary tendencies in the Canadian economy. The paper focuses on some of the important ways in which the tax/transfer system was changed in the 1970s and describes the effect of those changes on labour supply, capital formation, and the level of prices.

We first define stagflation and then analyse the effects of some important changes in the tax/transfer system. In the second section we describe the reduction in aggregate labour supply that occurred in 1972 as a result of the unemployment insurance program. In the third section we briefly comment on the potential negative effects of an unindexed personal income tax that were avoided by the introduction of rate bracket indexation in 1973.

We then turn to tax policies that affect savings and investment, by causing changes either in the magnitude of aggregate savings and/or investment or in the way savings are allocated. The fourth section describes ways in which measured aggregate savings and related variables (such as the size of the government deficit) are distorted by inflation and presents some data on inflation-corrected magnitudes of these variables. The fifth section discusses the effects of changes in the tax system on the level of aggregate savings. What we show here is that aggregate savings have not been much affected by the changes, made in the 1970s, in limits on amounts eligible for tax-sheltered investments; those changes were primarily a substitute for indexing the values of the limits. Most of the important changes in the tax system as it affects aggregate personal savings occurred earlier, when RRSPs were first introduced.

The next two sections describe the most important changes in the tax system that affected capital formation: those resulting from the effect of inflation on the taxation of income from capital. In those sections we present estimates of the magnitudes of the inflation-induced taxes on capital under the current tax system. These taxes have the same effect as a system of differential excise taxes on new capital goods that are arbitrarily varied from year to year: their effect is both to reduce capital formation at the corporate level and to accentuate at the personal level the diversion of personal savings into 'inflation hedges' such as housing or personal property.

To pull this discussion together, we present the results of some policy simulations that illustrate the magnitude in Canada of the effects we have described. These policy simulations used the University of Toronto FOCUS model to calculate the interaction of the direct effects of tax changes with other variables in the economy. What the simulations show is the large economic cost of features in the current tax system that increase stagflationary tendencies in the economy.

Stagflation may have a number of causes, as is evident from the other papers presented to this conference. What we wish to emphasize in this paper is that the tax/transfer system has been an important contribution in increasing the Canadian economy's propensity to stagflation. It is also a system that could be changed more easily than the other contributing factors. The tax changes proposed in this paper would reduce the unemployment associated with anti-inflationary monetary and fiscal policy while at the same time helping to lower the rate of inflation.

INTRODUCTION: WHAT IS STAGFLATION?

Stagflation is defined as a state of above-normal unemployment and inflation rates that last longer than one would normally expect in the recessionary phase of a business cycle generated by a temporary inadequacy in aggregate demand. We shall first describe different types of stagflation that illustrate different aspects of the problem and then describe the extent of stagflation as reflected in recent data for Canada and the United States.

A taxonomic paradigm

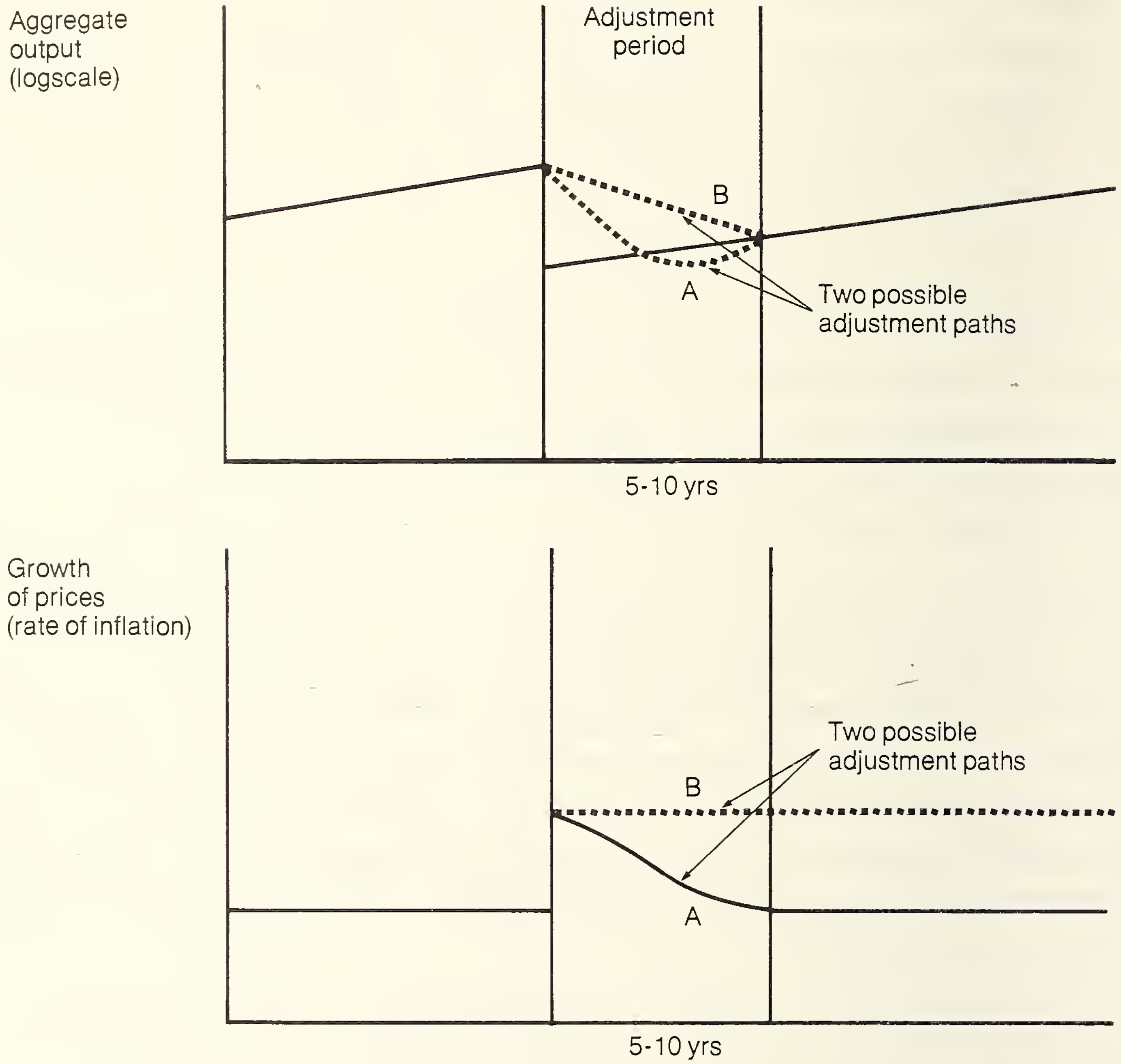
We shall assume as a paradigm that stagflationary conditions are a side-effect of the macro-economic response of the economy to an initial supply shock. The initial supply shock may be any shock of macro-economic significance that shifts the aggregate supply function upwards in important sectors of the economy. Essentially, such a shift means that the shock has increased the costs at which output can be produced and sold, thus increasing the level of prices at which any given level of output will be sold. More generally, it may be regarded as anything that causes a significant adverse shift in the terms of trade between countries or between sectors within a country and that therefore requires a reallocation of resources before a new long-run equilibrium is reached.

Either type of initial supply shock will require behavioural adjustments (generally including a long-term reallocation of factor resources) that will normally both occur slowly and engender further macro-economic adjustments.

It seems useful to distinguish between two types of stagflation. The first type is one in which the long-run equilibrium rate of growth is unaffected, so that the 'stagflation problem' is merely the effect of the time it takes for the economy to return to an 'equilibrium' in which all factors of production are fully employed. This first type of stagflation would be illustrated by the macro-economic response of an economy to a deterioration in its terms of trade under conditions in which the current and future supply of labour and capital are unchanged. The second type of stagflation is one in which the long-run rate of growth of potential output is also reduced.

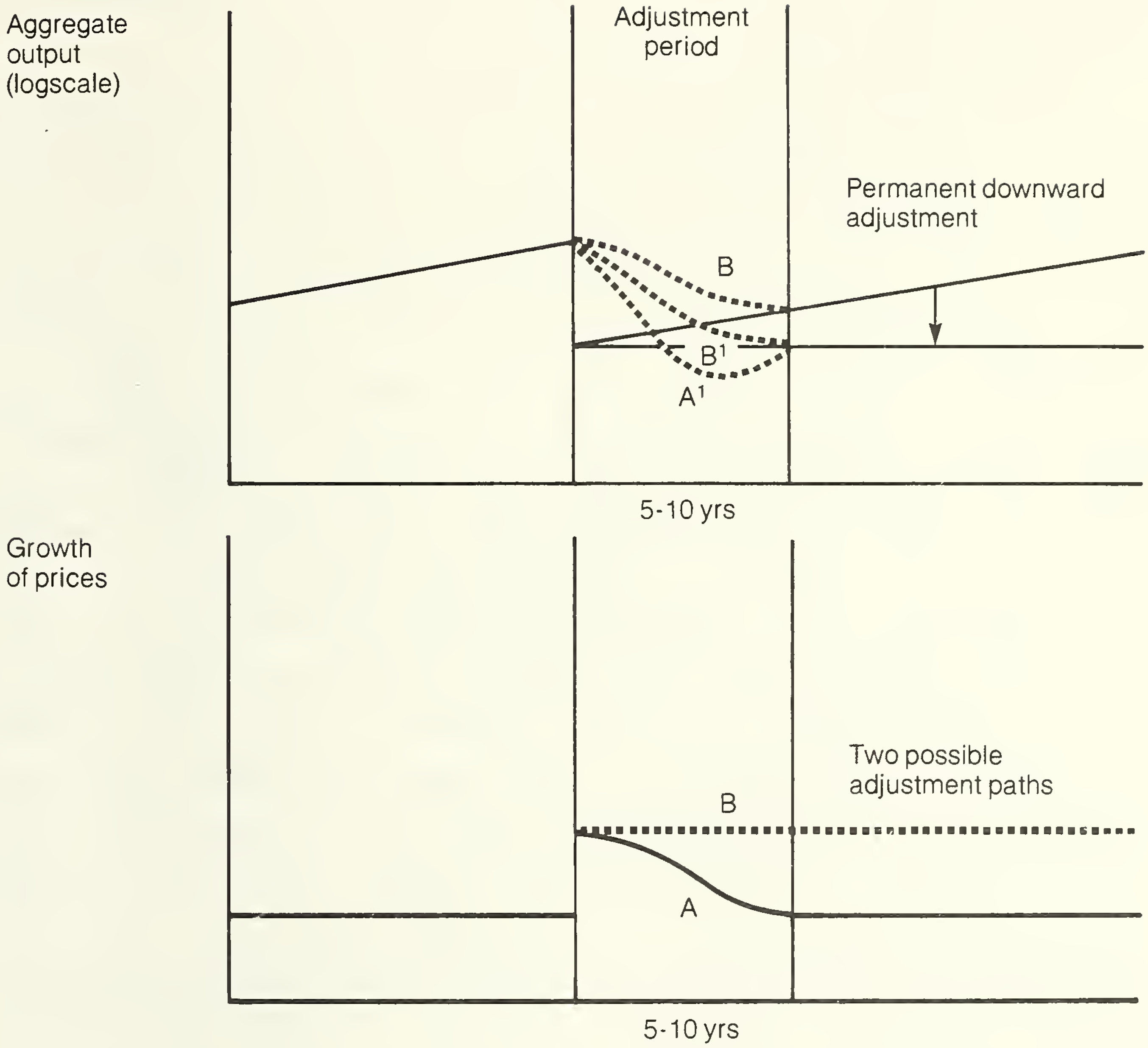
The two types of stagflation are illustrated in Figures 1 and 2. In both cases it is assumed that the initial supply shock may be regarded as the equivalent of a permanent reduction in the level of potential output (i.e. in the maximum real product available to domestic residents given the aggregate supply of labour and capital owned by residents). For the Ontario economy, increases in the prices of food, energy, and other imported raw materials have this effect, worsening the terms of trade for the Ontario economy and requiring reductions in real wages and real output in the long run. In both Figures 1 and 2, it is assumed that a fairly long adjustment period is required (e.g. five to ten years) before the economy has adjusted fully to the effects of the supply-side shock. In both cases it is assumed that the initial increase in prices triggered by the supply-side shock is at least partially accommodated by the monetary authorities. Two possible adjustment scenarios are shown by way of illustration. In

Figure 1
Stagflation Type 1 (adjustment period type)


Aggregate output (logscale)
Adjustment period
B
A
Two possible adjustment paths
5-10 yrs
Growth of prices (rate of inflation)
Two possible adjustment paths
B
A
5-10 yrs

case A the price inflation initially induced by the supply shock is gradually brought down to what it was before the shock. In case B, the rate of inflation is not brought back down, so that the increase in the rate of inflation is permanent. The first scenario requires a greater temporary reduction in real output in order to generate sufficient excess supply in labour and product markets to cause prices and wages to be reduced. The second scenario avoids the extra temporary reduction in real output required to correct inflationary expectations but requires the economy to adopt institutional arrangements to permit a long-run equilibrium with an unchanged real growth rate.

Figure 2
Stagflation Type 2 ('permanent' type)


Aggregate output (logscale)
Adjustment period
Permanent downward adjustment
B
B¹
A¹
5-10 yrs
Growth of prices
Two possible adjustment paths
B
A
5-10 yrs

The more serious type of stagflation is the one illustrated in Figure 2. In this case, the effects of Type 1 stagflation are magnified by the additional effects of a reduction in the long-term equilibrium growth rate of real output per capita. Assuming the initial drop in the long-run equilibrium level of real output to be the same as in Figure 1, the additional effect on the long-run equilibrium growth rate has two consequences: First, it increases the subsequent gap between the new long-run equilibrium levels of real output and real wages and what such long-run equilibrium values would have been in the absence of the supply shock, thereby increasing the likely duration of the adjustment period.

This may be seen in Figure 2. The reduction in the rate of growth reduces the equilibrium level of potential output at the end of the adjustment period, thus requiring a greater adjustment of actual output. Second, it reduces the level of future real output that will be generated by the economy after a new long-run equilibrium has been reached.

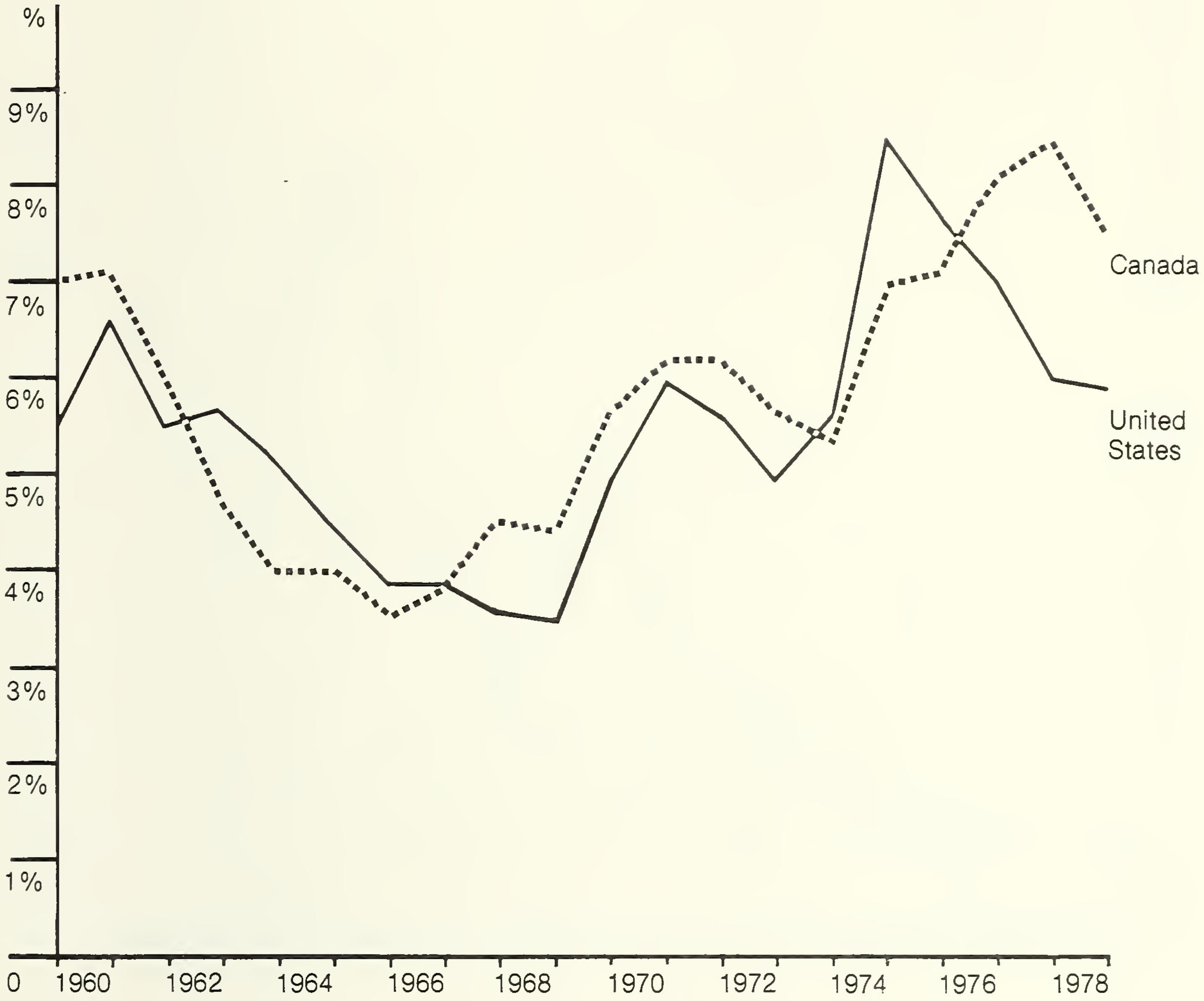
What we intend to focus on in this paper is the extent to which the changes in the tax system and the transfer payments system that occurred in Canada during the 1970s have contributed to either Type 1 or Type 2 stagflation. We will be concerned both with changes that cause an initial, one-time, maintained supply shock and with changes that cause a reduction in the rate of growth of potential real output as a response to the inflation initially induced by the supply shock. An example of the first that we shall discuss is the potential reduction in aggregate labour supply resulting from the 1972 changes in the unemployment insurance program. Assuming that this reduction primarily affects the fraction of the potential labour force that is employed and does not affect the growth rate of the potential labour force, the 'equilibrium' effects of this reduction are limited to a one-time permanent drop in the level of potential real output compared to what it would otherwise be; this is equivalent to the drop in potential output from one growth path to a second lower but parallel growth path shown in Figure 1. An example of the second that we shall discuss is the potential reduction in real investment resulting from inflation-induced excise taxes on capital goods that are created within the current tax structure by the inflation caused by an initial supply shock. A reduction in the rate of growth of the real capital stock engenders a reduction in the rate of growth of potential output. This is equivalent to the change in the equilibrium growth path shown in Figure 2.

The current extent of stagflation

Before we turn to the effects of changes in the tax/transfer system, it will be useful to describe briefly the magnitude of what may (somewhat loosely) be termed the current stagflation problem. This will be done by simply summarizing what has happened to prices and unemployment.

The recent history of inflation and unemployment in Canada and the United States is shown in Figures 3 and 4. As Figure 3 illustrates, the average unemployment rate was much higher level in both countries in the

Figure 3
Unemployment rates

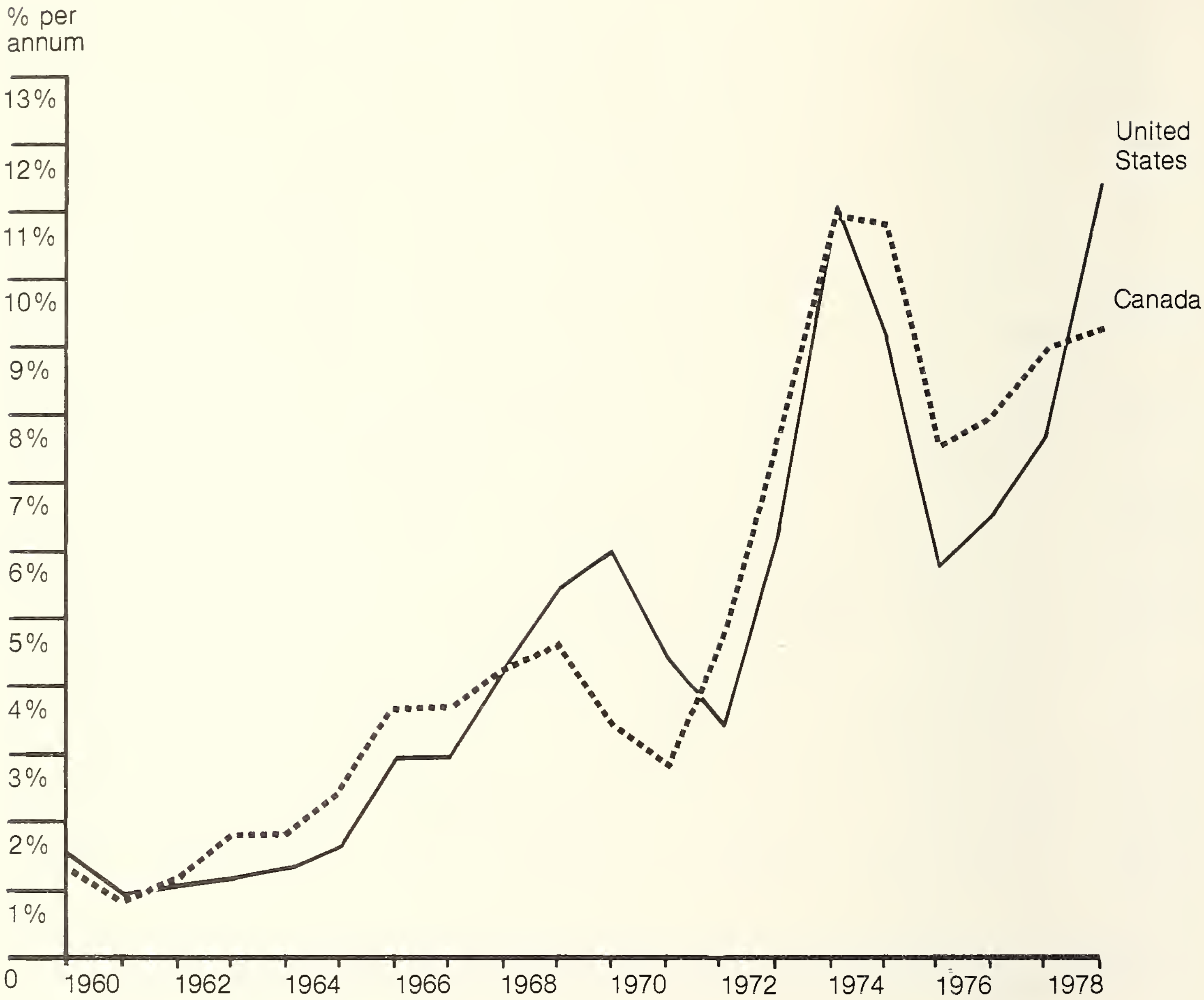


Source: Canada – 1960-5: Statistics Canada, *Seasonally Adjusted Labour Force Statistics*. Table 4, Unemployment rates 14 years and over. 1966-79: Statistics Canada, 'CANSIM mini base.' Unemployment rates 15 years and over, Matrix 2075.

United States: *Economic Report of the President* (Jan. 1980) Table B 27, p. 234, Non institutional population and the labour force. Unemployment rates (16 years and over)

1970s than in the 1960s. Moreover, the rate of unemployment grew during the seventies. At the same time the rate of inflation accelerated at relatively uniform rates in the two countries. The resultant trend towards stagflation is illustrated by Table 1, which shows the five-year averages of the unemployment rate, the inflation rate, and a 'stagflation index' consisting of the sum of the first two.

Figure 4
Inflation rates



Source: Canada: Statistics Canada, *Consumer Prices and Price Indexes*, Table 6, Percentage change from previous year (annual average) all items.
United States: *Economic Report of the President* (Jan. 1980) Table B 52, Changes in consumer price index (annual average) all items

Though a crude measure of performance, the stagflation index illustrates the deterioration in economic performance during the last decade.

TAXES, TRANSFERS, AND LABOUR SUPPLY

The tax and transfer system is frequently blamed for the economy's ailments. In particular it is claimed that taxes and transfers reduce work

TABLE 1
Unemployment and inflation rates, Canada and United States, 1960-79

	Unemployment rate		Rate of inflation		Stagflation index	
	Canada	U.S.A.	Canada	U.S.A.	Canada	U.S.A.
1960-4	5.7	5.7	1.4	1.2	7.1	6.9
1965-9	4.0	3.8	3.7	3.4	7.7	7.2
1970-4	5.8	5.4	5.9	6.1	11.7	11.5
1975-9	7.6	7.0	8.9	8.1	16.5	15.1

SOURCE: See sources to Figures 3 and 4.

effort and thereby result in a significant reduction in aggregate supply. Transfers such as unemployment insurance may compound the problem, not only by reducing aggregate supply but also by distorting the meaning of the unemployment rate, the key variable that is used to measure the under-utilization of the economy's factors of production. To the extent that the distortions in the unemployment rate mislead policy makers into overly expansionary policies, the stagflation problem is compounded. Since the 1971 Unemployment Insurance Act was the most important change in the Canadian transfer system during the last decade, we will first discuss its effects on unemployment and aggregate supply before turning to changes in the income tax structure as a method for increasing aggregate supply. We will concentrate on the effects on the labour market of taxes and transfers.

Unemployment insurance

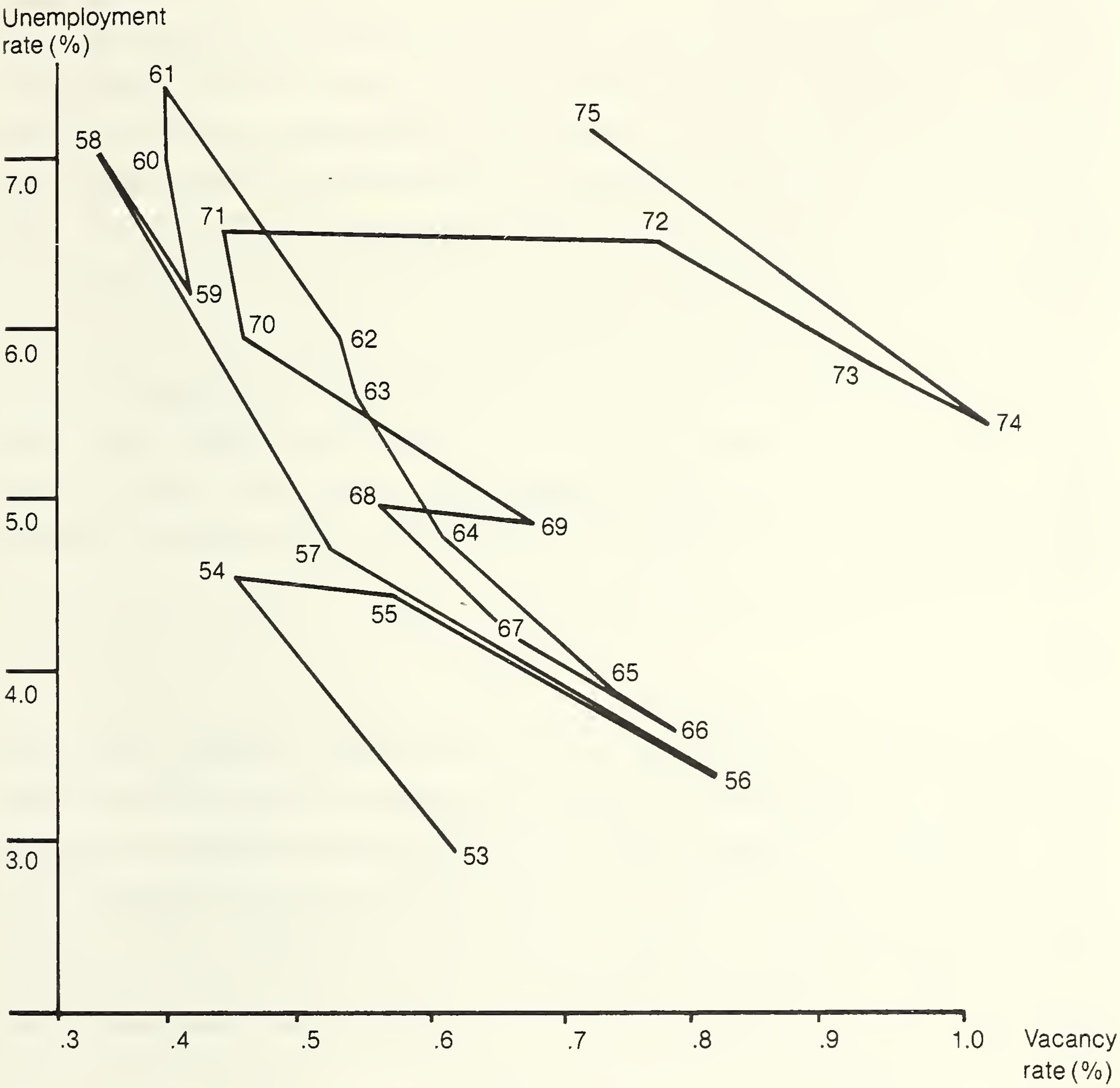
The 1971 Unemployment Insurance Act greatly increased unemployment insurance benefits and reduced eligibility requirements. This additional insurance coverage reduces the risk faced by workers, but it may also introduce moral hazard. If the incidence and duration of unemployment are to some extent under the control of workers, the program will increase unemployment. This occurs because it is not possible for those who administer unemployment programs to determine without error if someone is unemployed or to determine the extent of a recipient's search for a job.

The theoretical effects of unemployment insurance on the unemployment rate depend on our concept of unemployment. If unemployment is a period without leisure in which someone searches for a job, the unemployment insurance benefits will subsidize search and induce additional unemployment. At the same time the additional income received will induce less work and less search, partially offsetting the effect of the lower cost of search. If unemployment is all leisure and the duration of this leisure is totally under the control of the recipient, unemployment insurance is similar to any income maintenance program. The additional income and the implicit tax on work both reduce work and increase unemployment for most recipients. Under both theories of unemployment there is an additional dimension because the unemployment insurance program makes labour force participation more attractive. One can enter the labour force, work for a while, and then enjoy a period of paid leisure or subsidized search.

Unemployment insurance has two distinct implications for macroeconomic analysis. First, it affects our ability to use the unemployment rate as an indicator of the state of the economy. Second, it actually changes the aggregate supply function. The first effect suggests that the equilibrium or natural rate of unemployment is raised by the program. Evidence on the effect of the 1971 Act on the measured unemployment rate comes from a number of sources. The most dramatic piece of evidence is the relationship between unemployment and job vacancies. Figure 5 (taken from a study by Reid and Meltz) shows that there was a substantial upward shift in the unemployment/vacancy relationship in 1972, coinciding with the new Act. Based on an analysis of this data, Reid and Meltz (1979) conclude that the 1971 Act added 1.9 percentage points to the unemployment rate for a given level of vacancies. In addition, they estimate that the increasing relative importance of women and youth in the labour force added 1.2 percentage points to the unemployment rate between the mid 1960s and the mid 1970s. The sum of these figures is somewhat higher than the 2 per cent increase in the natural rate of unemployment estimated by Dungan and Wilson (1980). A number of other studies have produced a range of estimates, the median of which is an increase in unemployment of approximately one percentage point as a result of the 1971 Act.

The effect of the unemployment insurance program on aggregate supply will differ from the effect on the natural unemployment rate.

Figure 5
Canadian unemployment and vacancy rates, annual figures, 1953-75



Source: Reid and Meltz (1979)

First, it is by no means clear that the Labour Force Survey data pick up all of those receiving benefits. The unemployment concept in the Labour Force Survey is not the same as the criterion for benefits. Rea (1979) examined the 1974 data on weeks of unemployment from the Survey of Consumer Finances and compared it with receipt of unemployment insurance benefits. The total families with unemployment insurance benefits roughly equal the number of families reporting unemployment, but half of those reporting unemployment did not receive benefits and half of those receiving benefits did not report unemployment.

The aggregate supply reduction equals the reduction in work by those who were previously in the labour force minus the increase in work by those induced to enter the labour force. Jump and Rea (1975) estimated that the 1971 changes increased the participation rate by 0.4 percentage points. Therefore, aggregate supply fell by 0.4 percentage points less than the increase in the aggregate unemployment rate. This difference will be diminished if the new workers are imperfect substitutes for those reducing their labour supply.

It should be pointed out that there were modifications to the Unemployment Insurance Act in 1975, 1977, and 1978. The general effect of these amendments has been to reduce the benefits and tighten the eligibility requirements. It is possible that as much as 40 per cent of the effects of the 1971 revision have been reversed by the cumulative result of these amendments.

Taxes

It has been claimed that the tax system causes similar reductions in aggregate supply. Consequently it has been suggested that a reduction in tax rates would increase labour supply to such an extent that tax revenues would not fall. The impact of taxation depends in part on whether the revenues are to be used to finance government expenditure that has few benefits directly allocable to individual taxpayers or whether it is used to finance transfers to other taxpayers. We will consider the former case first.

The effect of taxes on labour supply consists of two components, a substitution effect and an income effect. A tax reduction increases the returns to work and induces a substitution of income for leisure. On the other hand, the greater disposable income made possible by the tax reduction induces the taxpayer to buy more leisure, in other words to work less. The combined income and substitution effects may be positive or negative. In other words, work may even fall when taxes are reduced.

Consider a reaction to a reduction in a simple proportional tax on earnings. The labour supply will increase in response to this tax reduction if the substitution effect outweights the income effect. The empirical estimates of labour supply suggest that the reverse may be true, particularly for adult men. That is, the tax reduction will actually reduce work. Some of the available evidence shows that work may increase in response to such a tax reduction, but an increase in tax revenue as a result of a tax decrease in the absence of demand effects can occur only if labour supply increases by enough to offset the tax cut. In fact, the wage elasticity of labour supply must exceed the reciprocal of the tax rate.[1] Such an elasticity is beyond the range of any estimate of labour supply.

The effect of changes in tax rates under a progressive income tax system is more complex, but the principle remains the same. The tendency for work to fall in response to a tax decrease is augmented by the effect on incomes caused by a reduction in the tax on non-wage income. The actual pattern of response to a tax change depends on the exact nature of the change and the taxpayer's position in the income distribution. For example, an increase in the standard deduction of $1000 will reduce the marginal tax rate and may increase hours worked for anyone whose taxable income is less than $1000 above the bottom of a tax bracket, but it will reduce work for everyone else.

The effect of taxation is more straightforward if the tax revenue is used to transfer income to lower-income groups. The transfer income will induce the recipient to work less. Since the recipients of the transfers will face a reduction in benefits if they earn additional income, the transfer program discourages work because of both substitution and income effects. If we assume that the income effects on taxpayers just cancel out the income effects on transfer recipients, the tax/transfer program leaves both groups with substitution effects that reduce work. This reduction is the price that must be paid if income is to be redistributed. Nevertheless, the elimination of transfer programs and the taxes that finance them would induce more work and increase tax revenues available for other programs.

Welfare implications

Before leaving the labour supply issue, we should note that the foregoing discussion of the supply response to taxes and transfers neglects the fact that the decrease in work allows more leisure to be enjoyed. Economic theory tells us that the leisure will be worth less than the forgone production of goods and services, but the net loss is much smaller than the gross reduction in earnings. We should remind ourselves that the ideal national income accounts would include the value of leisure enjoyed by the population.

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[1] For example, if the tax rate is 50 per cent, a reduction in the tax rate of one percentage point is equivalent to a 2 per cent increase in the net wage and a 2 per cent decrease in tax revenue. Labour supply would have to increase by at least 4 per cent to offset this loss of tax revenue.

Conclusions regarding labour supply

In summary, the changes in the unemployment insurance program in 1971 coupled with demographic changes increased the measured unemployment rate at full employment by as much as two percentage points. The unemployment insurance system has also reduced the aggregate supply of labour at full employment by approximately 0.6 per cent. A net reduction in labour supply is a natural consequence of any effort to redistribute income or insure against income instability, and a reduction in the extent of this redistribution would increase aggregate supply and raise the level of income. However, it should be emphasized that this effect is due to the redistributive structure of the tax/transfer system, rather than to the average level of taxes. The labour supply literature suggests that a simultaneous across-the-board reduction in taxes and government expenditure on goods and services will do little to increase labour supply.

TAX RATES AND WAGE-PUSH INFLATION

Aside from their longer-run effects on labour force participation and the size of the aggregate labour force, changes in taxation may also have a short-run effect on wages. The key question here is the extent to which announced increases in personal income taxes are shifted forward to producers in the form of higher wages. To the extent that workers try to maintain some particular level of real after-tax (disposable) income and perceive the terms of wage bargaining in relation to that target, such shifting may occur in the short run.

Empirical evidence on this question is mixed. Evidence presented in Kotowitz (1977) and Wilson and Reid (1979) suggests that changes in the progressivity of the tax system may have a weak impact on wages. Auld and Wilton (1980) present evidence of a higher degree of shifting of tax changes; their conclusion is that as much as 80 per cent of an announced tax increase is shifted forward. Because any shift in the labour supply function will engender a large number of offsetting reactions, it may be difficult to obtain strong evidence for such shifting from econometric studies.

The extent of forward shifting of increases in the personal income tax is crucial in evaluating the effect of indexing tax rates or the effect of tax substitutions intended to change the price level directly. We examine each in turn.

Effect of indexing tax rates

One of the important changes in tax policy made during the 1970s was the indexation of rate brackets in the personal income tax. Until indexation was introduced in 1973, the marginal personal income tax rates facing an individual were increased by inflation, even when the individual's real income was unchanged. This meant that to maintain after-tax real income at an unchanged level, an individual would have had to obtain an increase in nominal wages that was larger (as a percentage of previous year's nominal wages) than the rate of inflation. The additional increase in real wages that would be required to compensate wage-earners for the increase in effective tax rates will be called the 'tax catchup.'

If there is forward shifting of the tax catchup, the aggregate supply function for the economy is shifted upwards, causing a 'cost push' acceleration of inflation or a reduction in aggregate output or both. In this way, an unindexed tax rate schedule increases the tendency already in existence for the economy to generate a stagflationary response to an initial inflationary shock.

While the extent of forward shifting of the personal income tax is debatable, such shifting may be significant in the short run. The introduction of tax bracket indexation in 1973 thus removed an important way in which the tax system can contribute to stagflation.

Effect of substituting income taxes for sales taxes

One change that has been suggested as a means of effecting a one-time reduction in the price level is a reduction of sales taxes financed by an increase in personal income taxes. This proposal is motivated by the assumption that sales taxes are shifted forward in the form of higher prices of consumer goods and that income taxes are shifted forward in higher wages only to a limited extent.

In order to provide some evidence on the extent to which such a tax substitution may be useful, we simulated its effects using the University of Toronto FOCUS model. A reduction of three percentage points in the federal manufacturers' sales tax was assumed, financed by a uniform 3.5 per cent increase in federal personal income taxes. The results are shown in Table 2 under the assumption of 50 per cent forward shifting of the personal income tax increases. The model's price equations imply virtually full forward shifting of sales taxes.

The effect of the tax substitution was a mild reduction in the price level: by 0.4 per cent in the first year and by more in later years. A small increase in output (up to 0.3 per cent) was also obtained.

The extent of the price and output changes are very much dependent on the degree of forward shifting assumed. Another simulation was run assuming no forward shifting. In this case, the reduction in the Consumer Price Index was more than 50 per cent larger and the increase in output was 25 per cent larger.

It should be noted that the impact on the inflation rate, as opposed to the price level, is much diminished in later years. The permanent reduction in the rates of inflation yielded by the experiment (through a downward adjustment in expectations) in virtually zero. This suggests the greatest usefulness of this policy is as a 'one-shot' tool: for example, to mitigate the inflationary impact of another policy or as an adjunct to a formal or informal 'incomes policy' or other measure designed to reduce inflationary expectations.

Several other points should be noted about the simulated macroeconomic effects of the tax substitution. First, the exchange rate appreciates slightly under the policy, reinforcing the reduction of domestic inflation. Second, while the policy is virtually neutral in its impact on total real GNP, it has a differential impact on the expenditure categories. Consumption is initially reduced (reflecting the loss of disposable income because of the personal tax increase) but subsequently increased owing to the increase in employment. Investment is stimulated, in part because the

TABLE 2

Simulation of macro-economic effects of reduction in manufacturers' sales tax offset by increase in personal income tax

	Change from actual values			
	1974	1976	1978	1980
Real flows (millions of 1971 $)				
Gross national product	10	133	339	362
	(0.0)	(0.1)	(0.3)	(0.3)
Consumer expenditures	-14	-24	46	113
	(-0.0)	(-0.0)	(0.1)	(0.1)
Total business investment	21	10	137	141
	(0.1)	(0.0)	(0.6)	(0.6)
Consolidated government surplus (all levels)	-94	-47	122	-4
	(-3.4)	(1.5)	(-1.7)	(0.0)
Net exports	1	142	129	100
	(-0.0)	(-2.4)	(-3.7)	(-2.7)
Labour markets				
Total employment (thousands of persons per year)	-	4	20	23
	(-0.0)	(0.0)	(0.2)	(0.2)
Unemployment rate (percentage of labour force)	-	-	-0.1	-0.1
	(-0.0)	(-0.4)	(-1.4)	(-1.6)
Prices and related items				
Consumer Price Index (1971=100)	-0.4	-0.7	-0.7	-0.9
	(-0.3)	(-0.5)	(-0.4)	(-0.4)
Interest rate on new long-term government bonds (%)	-0.1	-0.1	-0.1	-0.1
	(-0.8)	(-0.6)	(-1.6)	(-0.5)
Exchange rate ($Can./$U.S.)	0.001	0.003	0.005	0.004
	(0.1)	(0.3)	(0.4)	(0.3)
Real wage rates (1971 dollars per year per employee)	34	28	25	39
	(0.5)	(0.4)	(0.4)	(0.6)

NOTE: The figures shown represent differences between the values of each variable produced by the simulation and corresponding values in a control solution of the FOCUS model tuned to replicate exactly the events during the period of the simulation. Figures in parenthesis represent percentage changes from control solution values. It should be noted that in some cases the control solution values are negative, which affects the sign of the percentage changes. For more details of the simulation definition, see Appendix A.

experiment assumed an exogeneous nominal money-supply policy for the Bank of Canada; under the induced (relative) deflation, the real money supply is thereby increased and real interest rates fall.

STAGFLATION AND THE RELIABILITY OF CONVENTIONAL STATISTICS

The slide of the economy into a period of stagflation since the mid 1970s has been accompanied by a number of fundamental changes in the measured values of certain statistics commonly used to gauge economic performance. For example, we have just reviewed the contention that a specific value for the measured unemployment rate has different implications about the state of the labour market today than the same value had before the 1971 revisions to the Unemployment Insurance Act. As another example, it has been argued that increases in the expected rate of inflation will lead to matching increases in nominal interest rates. This latter phenomenon has been clearly evident in the marketplace.

In addition to these two familiar examples, the higher rates of price inflation of the past decade have had less widely recognized effects on the measured values of other economic variables. Failure to recognize these effects has, we believe, lead to some confusion between the purely nominal consequences of inflation and the causes of stagflation.

The effects to which we refer arise because conventional GNP accounting procedures attempt to exclude capital gains and losses from measured values of incomes. During periods of rising or falling prices these attempts are not completely successful, and measured incomes are distorted by the partial inclusion of inflation-related capital gains and losses. The phenomenon arises through the accounting treatment of interest receipts and expenses.

When the expected rate of inflation rises, the increase in nominal interest rates provides the holder of a fixed-income asset (liability) with a flow of additional interest receipts (expenses) sufficient to offset at least part of the anticipated capital depreciation (appreciation) in the real value of his asset (liability). This 'inflation premium' is in essence a capital gain (loss) that takes the form of higher interest earnings (expenses). Accountants add (deduct) interest receipts (expenses) to other earnings in computing measured incomes, but they do not deduct capital depreciation (appreciation) on fixed-income assets in making this computation. As a result, the measured incomes of creditors rise with increases in the expected rate of price inflation while those of debtors decline. Measured incomes appear to be reallocated from debtors to creditors when inflation rises, but this is mostly a statistical illusion insofar as nominal interest rates adjust to inflation expectations.

For most sectors of the economy these measurement distortions are small in relation to total sectoral income levels. However, the distortions also appear in measured saving figures (which are computed as the difference between measured incomes and expenditures), and they can be large in relation to overall saving levels. An increase in inflation will appear to reallocate sectoral savings from those sectors that are net debtors to those that are net creditors.[2]

As some evidence of the magnitudes of these measurement effects on sectoral saving during recent years, we offer Table 3. Shown in the table are actual measured values for selected sectoral saving variables. Also shown are 'inflation-adjusted' values for these variables in which estimates of the inflation distortion have been removed. Inflation-adjusted values may be interpreted as estimates of what measured saving would be if accounting procedures were completely able to eliminate the capital gains and losses associated with the inclusion of inflation premiums in measured values of sectoral incomes. The following are the implications of the figures in the table.

¶ The much-discussed increase in the measured value of the personal saving rate in 1973-9 is in considerable part an inflation-related statistical result of the net-creditor position of the personal sector. The average value of the inflation-adjusted personal saving rate over this period is only slightly higher than its average value during 1962-9.

¶ Canada is a net debtor to the rest of the world. The balance of payments on current account represents the negative of Canadian dollar saving undertaken by the rest of the world. Given Canada's net indebtedness to foreigners, higher rates of price inflation cause the measured value of this balance to decline, and the magnitude of this effect is estimated to have been about $1 billion in 1979. This saving distortion in the current account is 'self-financing' since the capitalized value of

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2 For a fuller explanation of these effects, see Jump (1980b).

TABLE 3

Measured values versus inflation-adjusted values of selected saving variables, Canada 1962-9

	Federal government surplus (+) or deficit (-)* ($ billions)		Total government surplus (+) or deficit (-)* ($ billions)		Balance of payments of current account ($ billions)		Personal saving rate (per centages)	
	Measured value	Inflation-adjusted value	Measured value	Inflation-adjusted value	Measured value	Inflation-adjusted value	Measured value	Inflation-adjusted value
Average 1962-9	0.1	0.4	0.2	0.7	-0.7	-0.5	5.6	4.4
1970	0.3	0.8	0.8	1.8	1.1	1.4	5.3	3.3
1971	-0.1	0.6	0.1	1.2	0.4	0.7	5.9	3.9
1972	-0.6	0.5	0.0	2.0	-0.4	-0.1	7.4	3.5
1973	0.4	1.2	1.2	2.6	0.1	0.5	9.1	6.8
1974	1.1	0	2.8	4.8	-1.5	-1.0	9.9	7.3
1975	-3.8	-1.7	-4.0	-0.3	-4.8	-4.2	10.9	6.3
1976	-3.2	-0.9	-3.4	-0.6	-4.1	-3.0	10.2	5.9
1977	-7.4	-5.7	-5.4	-2.0	-4.3	-3.2	10.0	5.3
1978	-11.0	-8.0	-7.0	-1.8	-5.0	-4.0	10.4	5.9
1979	-9.1	-6.3	-4.5	-0.1	-5.1	-4.0	10.3	7.1

* Based on National Income and Expenditure Accounts
SOURCE: Jump (1980a)

Canada's real net indebtedness declines by an offsetting amount when prices rise.

¶ Recent increases in the size of the federal government's deficit have been partly an inflation-related statistical result. Higher inflation has increased the deficit through higher interest payments on outstanding debt. However the real value of the principal amount of debt declines with inflation.

¶ The government can be said to be in a zero net balance position whenever the real value of government debt does not change, i.e. when the inflation-adjusted value of the surplus or deficit is zero. Attainment of this position in 1979 would have left the federal government with a measured deficit of $2.8 billion.

¶ For all governments combined, there was in actuality no deficit in 1979 on an inflation-adjusted basis. This is partly because provincial surpluses offset the federal deficit and partly because $4.4 billion of measured government deficits were illusory.

If economic agents fail to recognize the distinction between measured and inflation-adjusted values, they are apt to exert pressure on governments to eliminate measured deficits during inflationary periods. To the extent that these efforts are successful, they are likely to result in net surpluses on an inflation-adjusted basis. This can contribute to stagflation, by unduly lowering the level of aggregate demand.

TAX INCENTIVES AND PERSONAL SAVING

The federal government instituted a series of changes to the taxation of personal income during the mid 1970s that appear to provide incentives for increased personal saving. In 1974 the first $1000 of Canadian-source investment income was made tax-exempt. Also in 1974, RRSP limits were increased, allowing taxpayers a higher ceiling under which retirement savings can be sheltered from current taxes. Registered Home Ownership Savings Plan (RHOSPs) were introduced in 1975.

To the extent that these measures do encourage higher rates of personal saving they are also likely to promote a higher rate of domestic capital formation, leading eventually to an accelerated rate of growth in potential output and productivity. Whether the government intended these measures as a response to the supply-side shocks that occurred at about the same time in the energy and agricultural sectors is not clear. Whatever their intent, the government's tax measures might effectively blunt these supply-side effects on the economy's long-term growth path, provided the measures do indeed stimulate an increased rate of personal saving. The purpose of this section is to assess the incentives caused by these tax measures.

Before turning to that issue, let us caution those who would cite the high measured values of the personal saving rate in Canada during the past several years as evidence that the government's tax measures have been successful. The analysis of the preceding section has shown that recent high saving rates have been largely the result of inflation-related distortions in the measured series. On an inflation-adjusted basis, personal saving rates in the second half of the 1970s were only marginally higher than during the previous decade. The effect of the tax changes is therefore likely to have been an avoidance of a reduction in the savings rate (as occurred in the United States) rather than an increase in personal savings.

The tax measures referred to above are likely to induce an individual to increase his saving only if they increase the after-tax rate of return on marginal new saving. Individuals with outstanding mortgages or consumer credit debt can earn an after-tax rate of return on marginal saving equal to the before-tax nominal rate of interest, irrespective of whether investment income exclusions, RRSPs, and RHOSPs exist. The reason is that interest payments on these kinds of liabilities are not tax-deductible. A rather large fraction of Canadian taxpayers have mortgage and consumer credit liabilities; hence this segment of the population would not have any incentive to alter current saving behaviour as a consequence of the introduction of these tax measures.

But what of that segment of the population that does not have mortgage and consumer credit liabilities? How were these individuals affected by the tax measures? To answer this question, let us look at each of the individual tax measures in turn.

The $1000 investment income exemption would have no effect on the after-tax rate of return earned by a person with investment income of more than $1000. Such an individual would have an incentive to rearrange his assets in a form that qualified for the exemption so that he would benefit from reduced tax liabilities. This would increase his after-tax income, but he would have no incentive to save a higher fraction of this income than he had before the enactment of the tax measure.

For a debt-free individual with investment income less than the $1000 limit, the investment income exemption would provide an increased incentive to save, provided that the individual also had sufficient annual savings to exhaust the annual RRSP contribution limit. The effective after-tax rate of return earned on RRSP savings is the before-tax nominal rate of interest. If an individual has not exhausted the RRSP limit, then providing him with the ability to earn tax-free investment income cannot increase the after-tax rate of return he faces on marginal saving. Considering that RRSPs existed before 1974 and that individuals with low levels of investment income usually also have low levels of current saving, it is doubtful that the $1000 investment income exemption has stimulated a significant increase in the aggregate personal saving rate.

The 1974 increase in RRSP limits likewise affected the saving incentives of only a small number of individuals. An individual would have an immediate increase in the after-tax rate of return on marginal saving from this tax change only if (1) he previously had annual savings in excess of the old RRSP limit but less than the new limit; and (2) he had accumulated non-RRSP assets that yield less than $1000 on annual investment income.

Raising RRSP limits will provide individuals with an incentive to transfer existing assets whose returns are taxable into an RRSP. There will be no incentive to increase the annual flow of savings until such transfers reduce the holdings of unsheltered assets below the level that generates annual investment income of $1000, since otherwise the marginal tax rate on the last dollar of savings will be unchanged. Even where this happens, the increased saving incentive will only apply to those with annual saving flows between the old and new limits. The number of individuals in this position is likely to be small in relation to the overall population, though the number could grow as taxpayers run down their stocks of unsheltered assets.

Finally, consider the introduction of RHOSPs. These do offer an after-tax rate of return in excess of the before-tax nominal rate of interest to the individual who does not own a home but plans to purchase one within ten years. A fairly small fraction of taxpayers is likely to fall into this category, but those who do will have an increased incentive to save.

To summarize this analysis, it appears that the tax measures related to saving that were introduced by the federal government in 1974 and 1975 provide only very marginal incentives for increased personal saving. It is doubtful that these measures are sufficient to alter significantly the steady-state rates of saving and capital formation in Canada. To do so would require a sizable increase in the current limits on investments in these plans, so that the rate of return on marginal savings was affected for most taxpayers. The primary effects of the 1974-5 measures appear to be on the composition of the portfolios held by Canadian taxpayers. They encourage individuals to hold assets in forms that generate tax-sheltered incomes.

There is, however, one aspect of the relationship between taxes and personal saving that the foregoing analysis of effects on returns to savings does not reflect. These tax measures have reduced the general tax liabilities of Canadians during the past few years and contributed to federal budgetary deficits (on both measured and inflation-adjusted bases). If taxpayers are perceptive enough to recognize that current deficits imply higher future tax liabilities, they will regard some portion of current after-tax incomes as being transitory. Economic theory predicts and empirical evidence confirms that individuals tend to save a high fraction of transitory income. It may well be that recent rates of personal saving in Canada reflect this sort of behaviour. That is something which cannot be verified without a detailed empirical investigation that would go beyond the limits of this paper. It should be noted, however, that any type of personal tax reduction that gives rise to transitory income will increase current saving rates. It is likely that RRSPs, RHOSPs, and investment income exclusions should be regarded as generating transitory increases in income, and having therefore generated increases in savings for this reason.

CORPORATE TAXES AND INVESTMENT

Through the 1970s, corporate productivity was reduced by the necessity of replacing productive capital rendered obsolescent by the increase in real energy prices. This has meant that only part of aggregate business investment has gone into productivity-enhancing capital.

Beyond this, corporate investment has been negatively affected by the indirect effects of the inflation triggered by the increase in energy prices and by policy responses to this increase. These indirect effects result primarily from the increases in effective corporate tax rates that are induced by price inflation.

Effect of inflation on effective corporate tax rates

Inflation has had a strong influence on the taxes paid by Canadian corporations. During the early 1970s, a number of tax changes were introduced to stimulate investment in manufacturing and processing industries. These included most notably a reduction in the nominal tax rate to 40 per cent and introduction of substantially accelerated writeoffs. Had these tax reductions not been counteracted by inflation, they would have resulted in a material reduction in the effective rate of corporate tax on manufacturing firms.

The acceleration of inflation in the 1970s had the opposite effect, causing an offsetting increase in effective corporate tax rates. This is because pretax income is overstated for most firms under conventional accounting. Costs of goods sold are understated because of the use of first-in first-out inventory accounting. Depreciation provisions are understated in reported income figures because they are based on the original acquisition cost rather than replacement values. These understatements of costs cause profits before interest and taxes to be overstated. While this overstatement is partially offset for many firms by inflation-induced gains on debt, the offset is generally only partial. As a result, pretax income and hence taxes are overstated.

The effect of this may be seen by examining the figures presented in Table 4 for firms in the manufacturing sector. Part A of this table shows effective tax rates computed from reported income figures. These tax rates drop after 1973 because of the legislated tax reductions. However, as Part B shows, this reduction is illusory. When effective tax rates are calculated in relation to real current-dollar pretax income, they show a continued increase throughout the 1970s.

It should be noted that the increase in effective tax rates is not continuous in the other two sectors shown in Table 4. In the energy and

TABLE 4

Effective tax rates on reported and corrected pretax income (percentages)

	1966-69	1970-3	1974-7	1978-9
A Ratio of current taxes to reported pretax income				
Energy and mining sector	21.9	23.6	28.9	22.8
Manufacturing sector	37.9	40.5	34.9	32.2
Utilities and misc. sector	32.0	28.6	26.7	24.5
All firms in sample	28.9	29.8	30.0	25.4
B Ratio of current taxes to corrected pretax income				
Energy and mining sector	24.9	28.6	40.6	36.1
Manufacturing sector	42.1	50.7	51.3	53.2
Utilities and misc. sector	30.7	26.4	25.8	28.6
All firms in sample	31.4	33.8	38.4	36.9

NOTE: Figures are ratios of across-year totals of aggregate taxes accrued on a flow-through basis by firms in the sample to the corresponding across-year totals of aggregate pretax incomes. Taxes thus exclude deferred taxes. Pretax income in both cases does not include the effect of accelerated capital cost allowances; it is net of reported depreciation, corrected to be on a replacement-cost basis in Part B.
SOURCE: Bossons (1980a)

mining sector (comprising mining firms, oil and gas companies, and steel companies integrated backwards into mining), an expansion of exploration tax incentives led to a reduction in real effective tax rates on pretax income net of royalties at the end of the decade.[3] Firms in the utilities and miscellaneous sector have benefited from large gains in debt.

The figures shown in Table 4 indicate a sharp difference in average effective tax rates between firms in the manufacturing sector and firms in other sectors. The bias of the tax system against firms in the manufacturing sector has existed throughout the decade.

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[3] Note that the figures shown in Table 4 are of course prior to the effects of the National Energy Program introduced in October 1980.

Effect of tax changes on corporate cash flows

The corporate tax increases that occurred during the 1970s may have two effects on the volume of business investment in plant and equipment. The first is through their effects on cash flows, since retained earnings are reduced by the inflation-induced tax increases. The second is through their effects on the real after-tax rate of return on potential investments.

The aggregate effects on cash flows may be estimated in approximate terms using the data presented in Table 4; similar estimates may be estimated using aggregage data for all non-financial corporations.[4] Using the 1966-9 period as a benchmark, real effective tax rates have increased by an average of approximately 25 per cent in manufacturing and by a greater percentage in the energy and mining sector (owing primarily to legislated tax increases). In the utilities and miscellaneous sector, however, real effective tax rates have declined slightly. The overall effect on corporate taxes is shown in Tables 5 and 6. This calculation is approximate, but it shows that yearly corporate tax collections were about $1.6 billion larger in 1978-9 than they would have been had real effective tax rates stayed at the 1966-9 levels. Taking statutory tax changes into account, the total increase in corporate taxes attributable to the effect of inflation was approximately $3 billion.

The effect of the corporate tax increases on cash flows reduced the supply of internal funds available for investment unless offset by a corresponding reduction in dividends. For the large firms analysed in Bossons (1980a), dividend payout ratios increased slighly over the period for manufacturing firms but decreased for firms in the energy and mining, and the utilities and miscellaneous sectors. On balance, approximately one-half of the effect of the tax increase was absorbed by dividends.

Effect on investment

The main impact of inflation-induced tax changes on investment is likely to be through their effect on rates of return on potential investments. The impact of a change in the rate of inflation on this marginal rate of return

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[4] Different estimates of real effective tax rates obtained from aggregate data are presented in Bélanger and McIlveen (1980).

TABLE 5

Magnitude of aggregate increases in corporate taxes (1978-9 compared to 1966-9)

	Aggregate corporation income tax, 1978-9 average ($ million)	Estimated fraction due to increase in real effective tax rates	Aggregate tax increase (yearly rates) ($1 million)
Companies with assets over $10 million			
Energy/mining sector	1910	0.31	592
Manufacturing sector	2703	0.21	568
Utilities/misc. sector	563	-0.07	-39
All non-financial companies	5176		1121
Companies with assets less than $10 million	2280	0.22	502
Total	7456		1623

NOTES: Taxes are current tax accruals and exclude deferred taxes.
SOURCE: Figures in column 2 for companies with assets over $10 million are calculated from data in Table 4. For smaller companies, this fraction is assumed to be the same as the average for companies with assets over $10 million. Data in column 1 are from Statistics Canada, Industrial Corporations Financial Statistics.

is not directly related to the change in real average effective tax rates, but rather is primarily the result of a change in the real present value of tax savings generated by capital cost allowances.

The effect of inflation is obviously to reduce the real present value of tax savings generated by capital cost allowances deducted from income in future years. This can be offset by increasing the speed with which investments may be amortized. For the manufacturing and processing industries, in which an asset may be written off in the first two years, the effect of a 10 per cent inflation rate is to reduce the present value of the tax savings by somewhat under one-eighth.[5] With the current tax

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[5] This calculation assumes that there is on average a one-year lag between an investment and the time at which the first tax saving occurs.

TABLE 6

Estimated magnitude of inflation-induced increase in aggregate corporation income tax revenues, Canada ($million, 1978-9 average)

Tax increase due to increase in real effective tax rates since 1966-9		1623
Plus tax reductions introduced since 1969:		
- General reduction in corporate tax rate	700	
- Lower corporate income tax rates on manufacturing and processing	400	
- Accelerated writeoff for manufacturing and processing assets	425	
- Incentives for research and development	150	1675
		3298
Less estimate of legislated tax increases since 1969 on firms in the energy sector		397
Estimated tax increase attributable to effects of inflation		2901

SOURCE: The first figure is from Table 5. The effect of the general tax reduction is estimated from the data on total tax revenues in Table 5. Other tax reductions are obtained from Department of Finance (1979, Table 1). The estimated tax increase for the energy and mining sector is derived assuming it to be equal to the increase in taxes in this sector due to the increase in real effective tax rates between 1970-3 and 1978-9.

rate of 42 per cent on manufacturing and processing operations, this has approximately the same effect as a 6 per cent increase in the (real) relative price of investment goods.

In other industries, where capital cost provisions require a slower rate of writeoff, inflation causes a greater reduction in the real present value of future tax reductions resulting from capital cost allowances, and so is equivalent to a higher increase in capital goods prices. Again assuming a 10 per cent rate of inflation, the average magnitude of this effect for all industries is estimated as equivalent in present value terms to the following fractions of capital goods prices: 8 per cent on machinery and equipment and 12.8 per cent on structures. The aggregate effect of this on investment has been estimated using the University of Toronto FOCUS model; the effect of the inflation-induced capital tax has been an approximately 10 per cent decline in investment through the 1970s from what it would otherwise have been.

Macro-economic effects

In order to model the likely impact of these effects on investment and consequently on the economy, the Institute for Policy Analysis FOCUS model was used. This was done by simulating what the effects would have been of additional tax credits that would offset the effect of the equivalent capital goods price increases estimated above. In order to focus on the effect of the tax structure failure, an offsetting 27 per cent increase in corporate tax rates was also built into the simulation. The effect of this offset was to keep total corporate tax revenues unchanged during the first two years of the simulation. These tax changes were assumed to be implemented in 1974 and maintained since then. Other assumptions were that there would be no change in monetary policy and that any effects on the government deficit or on the balance of payments would be reflected in changed interest rates and foreign exchange rates.

The results of introducing this change in tax structure are shown in Table 7. Real investment in machinery and equipment was increased initially by 14 per cent, but had declined to 6 per cent by 1980. Real investment in structures grew more slowly - on average 8 per cent a year in the four years 1977-80.

The macro-economic effects of this increase in investment were initially an increase in aggregate demand, which was subsequently dominated by the increase in potential output resulting from the increased capital formation. By 1980, six years after the policy change was introduced, the cumulative effect was to lower the general price level by 0.8 per cent and to lower the unemployment rate by 0.9 percentage points. The effect of the tax increases induced by the additional economic growth was a cumulative reduction in the government debt amounting to $2.4 billion.[6]

What this simulation measures is only part of the economic costs attri-

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[6] This is because the simulation held only corporate tax revenues constant in initial years. Revenues from other taxes were increased by the rise in aggregate incomes and expenditures. Also, corporate tax revenues were themselves increased in subsequent years as a consequence of the additional economic growth.

TABLE 7

Simulation of macro-economic effects of indexing capital cost allowances with offsetting increase in corporate tax rates, Canada 1974-80

	Change from actual values			
	1974	1976	1978	1980
Real flows (millions of 1971 $)				
Gross National Product	845 (0.8)	2478 (2.1)	2088 (1.7)	2932 (2.3)
Investment in non-residential structures	342 (5.0)	781 (10.5)	550 (7.1)	824 (9.0)
Investment in machinery and equipment	734 (8.2)	1036 (10.8)	262 (2.7)	692 (6.3)
Consolidated government surplus (all levels)	1067 (38.2)	398 (-12.4)	-701 (9.9)	685 (-12.0)
Net exports	-530 (10.8)	-417 (7.0)	139 (-4.0)	8 (-0.2)
Labour markets				
Total employment (thousands of persons per year)	50 (0.5)	141 (1.5)	113 (1.1)	148 (1.4)
Unemployment rate (percentage of labour force)	-0.3 (-5.9)	-0.9 (-12.1)	-0.7 (-7.8)	-0.8 (-10.2)
Prices and related items				
Consumer Price Index (1971 = 100)	1.0 (0.8)	1.8 (1.2)	-0.6 (-0.3)	-1.9 (-0.8)
Interest rate on new long-term government bonds (%)	0.3 (3.2)	0.5 (5.2)	0.5 (5.7)	0.6 (4.4)
Exchange rate ($Can./$U.S.)	0.004 (0.4)	0.033 (3.3)	0.005 (0.5)	0.004 (0.3)
Real wage rates (1971 dollars per year per employee)	-21 (-0.3)	64 (0.9)	118 (1.8)	103 (1.6)

NOTE: See note to Table 2.

butable to the failure of the tax system to reflect the impact of inflation. Nevertheless, even this part of the economic cost is considerable. The failure to introduce either some form of inflation accounting for corporate taxes or some measure that would offset the lack of inflation accounting has resulted in an average of 133 000 more persons unemployed over the past four years than would otherwise have occurred. At the same time, this failure has also resulted in consumer prices being higher than they would otherwise have been.

It should be emphasized that, since this simulation is designed to show the effects of the structural deficiency of the corporate tax system, it does not include any reduction in aggregate corporate taxes. Indeed, its overall effects on the government budget are to reduce the government deficit. As such, it underlines the extreme inefficiency of the government's failure to deal with the tax distortions induced by inflation.

THE ALLOCATION OF PERSONAL SAVINGS

The analysis in previous sections has shown that the combination of inflation-induced changes in the tax system and statutory provisions designed to increase savings have generated some increase in personal savings but a reduction in corporate investment. It may well then be asked: Where have the increased personal savings been allocated?

The allocation of personal savings has been substantially changed by inflation and statutory tax provisions. The major cause of this are (1) that nominal (spurious) increases in income required to compensate for increased inflation are taxed, thus increasing effective tax rates on real investment income, and (2) that these inflation-induced tax increases cause tax differentials between types of income that are taxed at different rates to be widened.[7]

For the individual, investment can be subject to tax at widely varying rates. Some investments are subject to full taxation of investment income. However, many investments are exempt from tax. For some investors, this may be because their total investment income is less than $1000 (the amount of exclusion introduced to alleviate the tax impact of inflation); for others, because their investment income is accrued within registered pension funds, RRSPs, or other tax deferral schemes. In some cases, investment income may be accrued in the form of capital gains taxed at lower rates.

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[7] For a fuller explanation of the nature of the inflation-induced taxes on real investment income, see Bossons (1980b).

Beyond these ways in which tax rates may be reduced, most investors also borrow. The real cost of borrowing is affected by inflation in the same way as the real return to the lender; the provision for capital maintenance required for the lender is an inflation-induced gain for the borrower. The carrying costs deducted for tax purposes by the borrower are not net of these gains on debt. As a result, the taxes paid by the borrower are subject to two offsetting inflation-induced changes: (1) an increase due to ignoring the capital maintenance provision necessary to reflect inflation, and (2) a decrease due to ignoring inflation-induced gains on debt.

If every borrower and lender were taxed at the same rate, the tax reductions for borrowers arising from the failure to include gains on debt in taxable income would exactly equal the tax increases for lenders resulting from the failure to allow adequate provisions for capital maintenance. In this case, the current tax treatment of interest would simply result in inflation causing a redistribution of taxes between borrowers and lenders; in the aggregate, there would be no change in taxes. Because these transfers of tax are arbitrary and cannot be completely foreseen, they add to the general increase in investment risk caused by a change in the rate of inflation. This additional risk is a disincentive to long-term investment.

In fact, borrowers and lenders are not taxed at the same rates, so that the distribution of tax changes caused by inflation is much more complicated. Before turning to this, however, we should note some aspects of the importance of the disincentive to long-term investment caused by inflation-induced increases in investment risk. First, some increase in risk would occur even if the tax system correctly took inflation into account. The effect of the current definition of taxable income is simply to magnify the size of unanticipated inflation-induced transfers between borrowers and lenders and so to magnify the basic inflation risk. Second, the increase in risk causes a reduction in both the supply of investment funds and the demand for funds at every rate of return. As a result, long-term investment will be reduced even though real rates of return may remain unchanged. Third, some long-term investments provide better insulation against inflation than others. Generally, real assets that can be held directly (such as real estate or durable commodities) are less subject to inflation risk than more complex pools of real assets (such as corporate common stock). Clearly long-term investments with fixed nominal incomes are most subject to inflation risk. An increase in the perceived risk of unanticipated changes in the rate of inflation will consequently cause an increase in the demand for assets that are good inflation hedges and a decrease in the demand for other long-term investments.

These tendencies have all been observable in Canadian capital markets. The increases in the rate of inflation have caused investors to project a greater risk of future unanticipated changes in the rate of inflation. The market for new long-term bonds has been drastically affected, becoming reduced to little more than a market for new government debt. The demand for housing and real collectibles has increased markedly. So has the demand for short-term investments by risk-averse investors avoiding long-term assets. The result has been that short-term interest rates, even though at record levels in nominal terms, are abnormally low when translated into real after-tax rates of return.

As noted before, this diversion of personal investment away from long-term investments other than housing and collectibles would have occurred even if the tax system correctly reflected the effect of inflation. It has, however, been magnified by the current tax system.

The distortions in capital flows attributable to the tax system's failure to reflect inflation correctly in defining taxable income have been further accentuated by other provisions. The most important are the exemption from tax of capital gains on owner-occupied houses and the provision of tax-deferral schemes.

When capital gains were made taxable in 1971, gains on principal residences were excluded from tax. At that time, when the annual inflation rate was hovering around 3 per cent and gradually declining, inflation was not generally regarded as a chronic, long-term problem. The allocative effect of exempting gains on principal residences was generally assumed to be relatively small.

The capital gains tax exemption for principle residences has significantly changed the flow of investment funds by diverting funds into the construction and renovation of owner-occupied housing. It has thus amplified the changes in long-term investing created by the tax magnification of inflation-induced increases in investment risk.

The existence and extension of deferred-tax schemes such as RRSPs and RHOSPs have to some extent offset the effect of inflation-induced taxes on capital, since capital in such schemes is insulated from the inflation tax. However, the limits on investments in such schemes are too small to permit this offset to have had a substantial effect.

IMPLICATIONS OF OUR ANALYSES

Some of the tax and transfer changes that occurred during the 1970s were deliberate. These include the 1972 changes in unemployment insurance, the 1973-4 reductions in taxes on manufacturing and processing industries, subsequent changes in investment tax credits, and the expansion of deferred-tax savings plans. With the exception of the changes in unemployment insurance, they would have had a positive impact on aggregate supply had they not been offset by inflation-induced tax increases.

Some of the changes, whether deliberate or not, affected the relationship between measured values of economic indicators and the macroeconomic performance nominally measured by such indicators. Examples of affected indicators include the 'natural' rate of unemployment, the rate of personal saving, and the size of the government's deficit. To the extent that these nominal changes in the statistical series by which economic performance is assessed were mistaken for real changes, governments may have been guided by false signals.

A number of features of the tax/transfer system have been evaluated in this paper, and a number of changes have been proposed. Their effects on stagflation are of varying significance.

A substitution of personal income taxes for sales taxes would, our simulation results suggest, have favourable results. But, as discussed above, the effect on prices and output would be relatively short-lived and of modest proportions.

The changes in unemployment insurance that were legislated in 1972 seemingly were motivated primarily by redistributive objectives. As has been noted, the original changes have been substantially diluted, and we assume that there is little likelihood of any further material change in the structure or level of employment insurance rates or benefits. Nevertheless, the changes that have not been reversed must be recognized as one contribution to the general propensity toward stagflation in the Canadian economy in the 1970s.

The deliberate changes in the tax system aimed at increasing savings and investments were more than offset by inflation-induced changes in the tax system that have altered the allocation of savings and reduced corporate investment. In previous sections we have concluded that the net effects on corporate investment of the deliberate and inflation-induced tax changes combined have been negative. Aggregate corporate investment has been less than it would have been had real tax rates remained at their 1966-9 levels. At the same time, aggregate personal saving may have been increased slightly by the net positive effect of tax changes. However, it seems clear that any increase in aggregate personal savings has been swamped by changes in the allocation of personal savings, the major reallocation being through a substitution of investment in owner-occupied residential buildings for investment in corporate securities.

The obvious questions to ask are whether the effect of inflation on the tax structure could be neutralized and, if so, how this could best be achieved. We will limit ourselves to proposing three tax changes that do not require the adoption of a complete system of inflation accounting:

- indexing capital cost allowances,
- indexing the cost base of publicly traded corporate equity securities for capital gains tax purposes, and
- indexing interest income and carrying charges.

These changes would be relatively easy to implement; technical particulars of these proposals are discussed elsewhere (see Bossons 1980b).

These three changes would eliminate the principal negative economic effects of the inflation-induced tax changes. In the first, the revenue effect of indexing capital cost allowances could be offset by an increase in the general corporate tax rate. However, such tax rate increases should be limited to what is required to keep real effective tax rates at their 1966-9 levels.

The effect of the proposed indexation of the cost base of corporate equities will primarily be to reallocate capital within the corporate sector rather than to change aggregate corporate investment (though there should be some small positive effect on aggregate investments). The main effect will be to increase the flow of capital to corporations from individuals compared to that from institutional sources, and so to increase the availability of capital to smaller Canadian firms.

APPENDIX A: DESCRIPTION OF POLICY SIMULATIONS

The policy simulations were produced using the FOCUS model of the Policy and Economic Analysis Program of the University of Toronto Institute for Policy Analysis. A 'flexible price' version of the model was used in which prices are determined by the interaction of the aggregate supply and aggregate demand functions generated for each period. This version of the price determination model was used in preference to the more standard 'markup' pricing model used in many macro-econometric models in order to reflect better the effects of changes in the aggregate supply function.

In each simulation the model used was a version of the FOCUS model that had been finely tuned to replicate exactly the historical values of all endogenous variables. This fine-tuning is implemented by calculating a vector of period-specific additive constants for each equation in the model, so that with these additive constants each model equation produces actual data values if all right-side variables do not deviate from their historical values. As a result, the policy simulations generate solution values that show what the differential effects of a simulated policy package would have been had it been adopted as specified for the simulation. This 'backcasting' application of the model thus attempts to hold constant the effects of residual shocks that occurred during the historical period but that were not predicted by the equations original model.

In any simulation it is necessary to model other aspects of macroeconomic policy that might be modified in response to the effects of the basic policy change that is simulated. In all simulations reported in this paper, it is assumed that exchange rates are permitted to adjust so as to eliminate any changes in the international balance of payments that would otherwise be induced. In the domestic money markets, it is assumed that the supply of money is not changed, so that any responses of capital markets to the effects of the basic policy change are reflected fully in interest rate changes.

The model version used was Version 80F. It incorporates some revisions to reflect improvements to the output pricing model and to permit varying assumptions about the extent of forward shifting of personal income tax changes.

REFERENCES

Auld, D. and D. Wilton (1980) 'The impact of progressive income taxes on base wage rates in Canada.' Paper presented to 1980 Canadian Economics Association meetings, Montreal

Bélanger, G. and N. McIlveen (1980) Rate of Return and Investment Profitability (Ottawa: Department of Finance)

Bossons, J. (1980a) Inflation-Adjusted Financial Statements for Canadian Non-Financial Firms (Ottawa: Economic Council of Canada forthcoming)

- (1980b) 'The effect of inflation-induced hidden wealth taxes. 'Paper presented to the 1980 Tax Conference (Toronto: Canadian Tax Foundation, forthcoming)

Department of Finance (Dec. 1979) Government of Canada Tax Expenditure Account (Ottawa)

Dungan, D.P. and T.A. Wilson (1980) 'Potential GNP: Performance and Prospects' (Toronto: Institute for Policy Analysis, University of Toronto)

Jump, G.V. (1980a) Inflation-Related Spurious Elements in Measured Savings of Various Sectors of the Economy: The Canadian Experience 1962-1977. Discussion Paper No. 151 (Ottawa: Economic Council of Canada)

- (1980b) 'Interest rates, inflation-expectations and spurious elements in measured real income and saving.' American Economic Review 70, 990-1004

Jump, G.V. and S.A. Rea (1975) 'The impact of the 1971 Unemployment Insurance Act on work incentives and the aggregate labour market.' Report submitted to Unemployment Insurance Commission. Mimeo.

Kotowitz, Y. (1977) The Effect of Direct Taxes on Wages (Ottawa: Anti-Inflation Board)

Rea, S.A. (1979) Unpublished memo

Reid, F. and N. Meltz (1979) 'Causes of shifts in the unemployment vacancy relationship: an empirical analysis for Canada.' Review of Economics and Statistics 61, 470-5

Statistics Canada, CANSIM Mini Base. Cat. 12-204 (Ottawa)

- Consumer Prices and Price Indexes. Cat. 62-010 (Ottawa)
- Industrial Corporations Financial Statistics. Cat. 61-003 (Ottawa)
- National Income and Expenditure Accounts. Cat. 13-531 (Ottawa)
- Seasonally Adjusted Labour Force Statistics. Cat. 71-201 (Ottawa)

United States (Jan. 1980a) Economic Report of the President (Washington: U.S. Government Printing Office)

Wilson, T.A. and F. Reid (1979) Wage and Price Behaviour in Canadian Manufacturing: An Econometric Analysis (Ottawa: Anti-Inflation Board)

T. K. Shoyama

I am a little over-awed this morning in my task of commenting briefly on the lengthy analysis by the team of experts from the Institute for Policy Analysis. It is a wide-ranging compendium of work, based on careful theory and extensive empirical and quantitative investigation, but my own prior exposure to it was very short and limited to the material actually presented by three of the authors. The only one who has not joined actively in this presentation this morning is of course the grandfather - or is it the godfather - of the Institute, whose fine Italian hand can be taken for granted.

Earlier this morning there was quite a discussion of the greater success achieved by Japan in dealing with the problem of stagflation. I was reminded of some of the discussion at the Vancouver Conference on Trade and Investment Opportunities in the Countries of the Pacific Asian Rim, in which I took part just last week. It so happened that three of the four members of the panel, of which I was one, were Canadians of oriental ancestry, which prompted the chairman to refer to it as something of an Oriental Express. It also so happened, however, that I had just returned from my first visit to Japan, and I have to say that on venturing out onto the streets of Tokyo, my first impression simply was how true it is - they all do look alike. Later, I found, that fact is not completely irrelevant in dealing with the problems of stagflation. This morning, I find that all the experts from the Institute analyse alike.

However, I have been asked this morning to comment on their analysis mainly from the point of view of one who was caught up in a practical way with the policy issues dealt with in the Institute paper. I shall do so mainly in an anecdotal way, sharing with you as well as I can recall how we in the federal Department of Finance tended to perceive and react to the numbers, pressures, and events that merged into the stagflationary difficulties that continue to confound a large part of the world's industrially advanced economy today.

The paper presented this morning begins with a succinct summary of the nature and extent of these difficulties in Canada and their close parallels in the United States. It then inquires into the effects of taxes and transfers on labour supply, arguing that the extensive changes in the unemployment insurance system made in 1971 have, by substantially broadening coverage and improving benefits, had two important stagflationary influences. First, by alleviating more effectively the adverse effect of unemployment on individuals, the new system has reduced labour supply and actual output and income. Second, in combination with demographic and social changes, it has altered or even distorted the significance of the measured unemployment rate. But the delay or failure to recognize this distortion may well have induced inappropriate policy responses.

As for the impact of tax changes on labour supply, the evidence is rather more ambiguous, since the aspirations of taxpayers are logically divided between the desires for increased incomes and for increased leisure. The conclusion on balance is that the tax increases needed to finance the large increase in transfers that resulted from the expansion of the unemployment insurance system also tended to reduce labour supply.

There is little in this analysis that I would quarrel with, nor do I believe that we failed to recognize these impacts, even though the quantitative assessment took time. It is, of course, a rather nice piece of irony if it is thought that these consequences were not foreseen in the studies leading up to the design of the new system. Professor Hartle himself played a leading role in those studies, although of course the system as it was actually legislated under the leadership of the Hon. Bryce Mackasey diverged in important elements from that recommended by the studies. The measured unemployment rate was, of course, a very important factor in the design and cost of the system, since it provided for a trigger level of 4 per cent national unemployment, above which all incremental costs were to be borne by the national treasury.

That trigger level was vigorously contested by the Finance Department as being too low and unlikely to be achieved over any lengthy period or even at cyclical growth peaks. The concept itself was worrying, particularly because it required a forecast of likely levels of unemployment just at a time when the political environment seemed almost mesmerized by the monthly unemployment number (see Reisman 1981, 198). The Minister of Finance was understandably alarmed by the political trap involved in having to forecast and budget for the government's contribution to unemployment insurance costs over the trigger level. An accounting device had to be introduced that provided for the necessary outlay of funds on a retroactive basis, but this in itself added to the complexities of understanding the budgetary accounts for fiscal policy purposes. That difficulty and the accounting device were only done away with in a series of steps made possible by the now general agreement that the natural rate of unemployment in Canada had, for a variety of reasons, moved upwards to at least 6 per cent.

But there was a long lag in that realization, and one can trace what is now criticized as an unduly stimulative policy in 1973 at least in part to this fact. I myself believe a sounder explanation lies in the political situation that developed after the October 1972 general election, in which the unemployment rate as measured played some part. One week before the election the unemployment rate for the previous month was reported by Statistics Canada at the unexpected level of some 7 per cent. That high number was immediately seized upon as completely exploding the government's election slogan that 'the land is strong' and was widely blamed as contributing to the government's failure to win a majority.

Even though subsequent revisions not long after lowered the unemployment rate as previously reported to 6 per cent, the obsession with the unemployment number was long and real. It continued through the ensuing two years of minority government and was by no means confined to political institutions. Most of the academic and other policy watchers were similarly hypnotized, and in Parliament itself, where the government was dependent upon NDP support, political considerations were dominant. An expansive fiscal and monetary policy could not be avoided, in spite of the first inklings of a resurgence of inflation after it had been temporarily wrestled to the ground in 1970-1.

The fiscal story of 1973-4 is familiar. There were large tax reductions on both the personal and corporate side, including indexing on the former, even though there had been almost no opportunity to appraise the comprehensive reform package legislated in 1971. Sales tax exemptions were also widened in a major way. At the same time, federal spending jumped sharply in response to the parliamentary situation, the pressures flowing from the social security review, and the effects of the first OPEC oil price shock.

In spite of all this, the impact of the expanded UI in pushing up the measured unemployment rate, although not yet easily measured, was argued loud and long in the internal discussions on fiscal policy in general and on the experimental direct job creation programs in particular. At the same time, despite the continuing effort to tighten up and reduce abuse of the system, it continued to be acknowledged that the system would play a major role in automatic stabilization under normal cyclical conditions. But I must admit that with unemployment moving up sharply from 1975 onwards, little attention was paid to the problems of reduced labour supply.

The Institute paper indicates two kinds of stagflationary effects of tax changes, particularly increases: first on labour supply and second on wage-push. As to the first, the argument about distinct income and substitution components, with somewhat ambiguous results, is clear enough. A particular cause for concern in the first half of the 1970s was the push for the combination of sharply higher wage rates and an offsetting cut in the work week. Here we had wage-push, no increase in output, and sharply higher unit labour costs. It was the beginning of the slowdown in productivity gains that has been such a prominent, unwelcome, and inadequately explained feature of our stagflation (Department of Finance 1980).

As for wage-push induced by the forward shifting of tax increases, the reverse question was a livelier practical issue. Would tax reductions intended to bolster take-home pay help materially to restrain a wage drive, which was increasingly fuelled by a rising CPI? It was partly in this context that the personal tax reductions, including indexing, were rationalized. The Hon. John Turner tried hard to sell this argument, particularly during the intensive round of discussions he personally undertook in 1974-5 in the vain attempt to win support for concerted voluntary price and wage restraint. But we rarely, if ever, found that union leaders fixed upon wage gains on an after-tax basis in setting their collective bargaining targets. And whatever might be said about the effects of indexing in helping to constrain wage-push, there is little doubt that, if such objectives were to be sought, they were more likely to be achieved by discretionary tax cuts, announced with the familiar political flourish intended to maximize public attention.

The second part of the Institute paper deals with the importance of the adjustment, under conditions of high inflation, of the reported values of 'particular series by which economic performance is measured.' It is a notion not unrelated to that of an adjusted unemployment rate. Particular attention is paid to the apparent jump in the rate of personal savings in Canada since about 1974.

Adjustment for inflation is a necessary and well recognized tool of analysis, even if we have been a little slow to grasp its full implications under persistent high rates of price increase. In most cases I do not think we were severely misled by fixing upon current nominal numbers. If it was not always possible to find suitable deflators for day-to-day analysis or short-term projection, there was always the quick and dirty reference to historical relationships with the GNP or components of the CPI. For certain important purposes, however, the nominal numbers were real enough - indeed at times too real. For example, even though the size of both budget and current account deficits may, as Prof. Jump observes, be partly illusory, the financing of the large nominal sums involved still poses new and real problems of management. The day-to-day decisions and perceptions that affect confidence, particularly in volatile financial markets, are still registered in current, rather than price-deflated, statistical numbers. Even that redoubtable showman, the Hon. John Crosby, would have hesitated to argue that with Mr Clark's government in office the federal deficit was largely illusory. His emphasis was more in the opposite direction. In many ways, however, the most striking evidence of a money illusion has been that despite the very large deficit of the federal government and most of the provinces, and despite frequent concerns over 'crowding out,' it has been possible to manage debt financing within the framework of the monetary targets of the Bank of Canada and its national exchange rate objectives.

Now as to the question of the personal savings rate and the rebuttal of the argument that tax incentives have been an important influence, a few observations seem to be called for. The first is that even after the inflation adjustment, the percentage rise in the rate seems to me to be quite significant. The charts show clear upward blips in 1973-5, and since then the adjusted rate has averaged over 6 per cent, in comparison with the 1962-9 average of about 4.4 per cent.

Secondly, would we have had this experience without the incentives introduced into the tax system to encourage saving? The IPA paper deals specifically with only three of the most important of these measures introduced in 1974-5 - the $1000 investment income exemption, the increase in RRSP limits, and the RHOSP tax shelter. In fact, of course, there have been more than half a dozen others during the period, and I find it hard to believe that their combined effect has not been partly responsible for what I see as a result. I do note, however, that the Department of Finance's own paper of last April (Department of Finance 1980b) is as cautious as Prof. Jump is asserting the important of the measures themselves and that it emphasizes more the behavioural response to anticipated inflation and the actual effects of inflation.

I doubt if we should attribute undue rationality to the average-income, or even higher-income individual, in his saving habits. Certainly the investment industry seems to think it has a package to sell in RRSPs and RHOPs, and the marketing effort must be paying off since it is being continued year after year. Even the $1000 interest exemption seems to continue to sell CSBs, when it is hard to believe they can be sold.

Furthermore, there is the well known and interesting contrast between the behaviour of the personal savings rates in Canada and the United States. The nominal rate continued at the high level of 10.2 per cent in this country in the first quarter of 1981. In the United States it fell to 3.7 per cent. Even the cautious Department of Finance concedes that 'both institutional and fiscal factors limit the incentives to increased personal saving in the U.S. compared to Canada, and the differential widens at higher rates of inflation' (ibid).

Finally, I find the point in the paper about transitory income quite persuasive. The jump, whether nominal or, as I argue, real, is pronounced in the 1973-5 period, when wage gains were accelerating at their fastest clip - 15 per cent in 1974 and 19 per cent in 1975. As an incidental rider, Prof. Lipsey's acknowledgment last night of Prof. Tobin's inertia theory of wage inflation is particularly interesting. We may not have articulated any elegant theory of this kind early in 1975, but we were much worried by the demonstrated strength of wage relativities and the momentum of wage gains that had been gathering steam for three years. The pace of these gains was also making a substantial nominal impact, at least on the compulsory savings in the CPP/QPP, as well as on private pension plans, but we do not know how much such plans may have affected voluntary savings.

I come now to the provocative and disturbing part of the Institute paper, dealing with the impact of high and continuing inflation on corporate taxes and business investment. We can all hope that this analysis receives more attention and critical discussion than Finance's own paper, also of last April, which indicated declining rates of return on corporate investment (Department of Finance 1980c). Prof. Bosson's work goes a good deal farther in spelling out the magnitude of increased corporate taxation induced by high inflation since 1974, the inter-industry shifts in burdens, and the important macro-economic effects stemming from the unintended increase. Even granted that significant increases were warranted and to some degree intended for the energy and mining sector, the estimate of the total increase is certainly very large.

My own quick reaction to this analysis is surprise. Looking back over the period from the 'neutrality' objective of the 1971 tax reform right through to the late seventies, my recollection was of the persistent effort to adjust the tax system to assist the flow of corporate investment. Both the resource industry and the manufacturing and processing industries received special attention. The main 'incentives' are well known and are spelled out in detail in the Finance Department papers on Tax Expenditure (Department of Finance 1979, 1980b). What Prof. Bosson's inquiry seems to show is that the impact of the many special structural changes in the corporate tax law, intended to enlarge cash flow and encourage new investment, was substantially more than offset by 'inflation-induced' increases in effective tax burdens.

It is certainly true that the stagnancy of business investment from 1975 up to 1979 was a major problem, and the analysis suggests an important contributing cause. The problem was a constant source of frustration for the finance ministers under whom I served, but in many discussions with the business community the more frequent causes cited were rather the existence of the controls program and the slackness of demand. Inflation accounting itself was also a constant topic of discussion, and the Hon. Donald Macdonald pushed hard to see if a consensus could be found on an effective, equitable, and reliable system that might be introduced. But even the suggestion that annual statements might be re-stated in inflation-adjusted terms purely for information purposes has not found wide support in the business community. Indeed, the earlier impetus for inflation accounting seems to have waned, perhaps because of improvement in profits and business investment in 1979.

If we accept at this time the validity of Prof. Bosson's analysis, it obviously follows that the problem will be even more intensified given the price outlook for an extended period. This emphasizes the importance of the issue and of the search for workable and acceptable remedies. Given the continuing great difficult in reaching agreement on comprehensive inflation accounting, the specific, immediate proposal is to index capital cost allowances. I am not exactly sure of the method proposed, and that in itself is important, especially if a major objective is the lessening of inter-industry distortions. I am also a little surprised that the proposal would go so far in correcting the situation. On grounds that are purely political and perhaps no longer relevant, I view with some trepidation a re-opening of the debate on capital cost allowances and deferred taxes, recalling the pejorative echos of 'corporate welfare bums.' The problem of recovering the decrease in revenues is perhaps more serious. I understand that Prof. Bossons has suggested elsewhere that a 27 per cent increase in the corporate tax rate is necessary to compensate for the revenues lost by indexing CCA, which underlines very vividly the magnitude of the problem.[1] Even with an unchanged total tax burden on the corporate sector, the shift in distribution would be extreme - and one thing experience teaches is that you rarely hear from those benefited by a structural tax change, but the din from the injured is instantaneous and explosive. It also follows that the more extensive the reform and change, the greater the din. Nevertheless, the evidence and analysis presented by Prof. Bossons obviously deserves the most careful study, and the search for ways to escape from the stagflation swamp may necessitate a courageous battle with an abundance of alligators.

[1] Prof. Bossons (1980) makes this suggestion in a revised version of a paper presented to the Canadian Tax Foundation, in which he adds further interesting proposals for an 'over-all tax reform package.'

I want to conclude, however, by reiterating my fear about the increasing reliance on indexation as a palliative for the effects of high inflation. Perhaps it is more true than ever that we have to learn to live with inflation, leaning as hard as practicable against it and using indexation when no other solution is available. I have come to sympathize more with the view expressed by one of my predecessors in office who held out strongly against indexing on the grounds that it not only accepted the inevitability of rapid inflation but also reinforced it. I now go so far, to my own surprise, as to accept the notion of partial, and even arbitrary, de-indexing of the personal income tax, if only to help the whole economy to adapt more quickly to the acceleration of increases in energy prices.

REFERENCES

Bossons, J. (1980) The effect of inflation-induced hidden wealth taxes.' Paper presented to the 1980 Tax Conference (Toronto: Canadian Tax Foundation, forthcoming)

Department of Finance, Government of Canada (1980a) 'Recent changes in patterns of productivity growth in Canada' (Ottawa)

- (1980b) 'The recent behaviour of the personal savings rate' (Ottawa)
- (1980c) 'Rate of return and investment profitability' (Ottawa)
- (1979, 1980d) 'Tax expenditure account' (Ottawa)

Reisman, S.S. (1981) 'Managing the economy: reflections on some practical problems.' In David C. Smith, ed., Economic Policy Advising in Canada - Essays in Honour of John Deutsch (Montreal: C.D. Howe Institute)

Discussion

QUESTION: Professor Shoyama very innocuously made a reference to the behaviour of the U.S. savings rate and the Canadian savings rate, and I would be interested in Professor Jump's reaction to that. And if I could elaborate a little, Slide 3 shows that Canada and the United States have been experiencing a fairly comparable inflation, and it was markedly different in the seventies than in the fifties and sixties. It's my impression that the United States is beginning to consider savings incentives, something like the ones we have in Canada. Yet the U.S. savings rate right now, compared to the Canadian savings rate, is historically low. My question is hypothetical: the Canadian savings rate has moved up in relation to what it was in the fifties and sixties; would it have been much lower in Canada in the absence of those incentive programs?

GREGORY JUMP: I really don't know. You are quite right about the U.S. saving behaviour: it has been historically low since about 1975; there has been a real divergence since 1975 between the Canadian and the U.S. savings rates, which never existed before. In the fifties and sixties there really wasn't any divergence. Of course, as Tom Shoyama has pointed out correctly, it is the increase in the Canadian savings rate that is significant; it occurred about 1974-5, and the U.S. rate fell at about the same time. Now I have not found any information as to why the U.S. savings rate has fallen, and it seems to me you almost have to ask two questions. If the Canadian rate has gone up a bit, why has that happened? I really don't think it's because of tax incentives per se; I think it's related to taxes. We are cutting people's taxes now and saying we are going to tax you later, and that causes people to save more of their taxable income. We don't have to have special tax-savings incentives and tax reduction to do that. But what is happening to us I can't explain, and I don't know anybody who can.

QUESTION: On behalf of everyone in the room I'd like to know what Slide 18 is all about. It shows a change from control results; obviously you had a simulation of 1985 in which you brought down inflation, increased real growth and output, cut consumption, increased investment heavily, increased exports quite heavily, cut imports, and the exchange rate drops quite drastically and so on. So what did you do?

DOUGLAS HARTLE: What we did, using the FOCUS model, was to reduce the manufacturers' sales tax by three points and to replace the revenues, relatively speaking, with an increase in personal taxes, and the results are before you. I think the important point is that it's favourable for

GNP, but at the very bottom of the slide you will see that the impact on prices very quickly peters out. Basically the results are favourable from that experiment, but it's important to recognize that the effect on the rate of increase in prices at the bottom is very quickly dissipated.

QUESTION: Mr Chairman, some of us have noted over recent years a considerable increase in inducements to save resulting from RRSPs, RHOPs, the thousand dollar exemption, and so on. I wonder if someone might comment on the various aspects of this. For example, it would seem that a lot of the population may well have put their savings into banks, trust companies, and other institutions of that sort, and one would think that the use of those savings would probably go into non-productive investment, if you can put it in those terms, such as housing and non-institutional construction. Has this had any impact on the growth in investments and the nature of investment in this country, and is it perhaps part of the reason for the increased rate of savings in this country as compared to the United States?

PROFESSOR JUMP: I think there is a change in the kind of assets people hold; no doubt this has been beneficial for the domestic securities industry. I think Canadian ownership has probably increased as a result. I think you are going to get these tax breaks, so there may be an effect on ownership, but I wouldn't expect to see much effect on the kind of investments. There has been a lot of talk about housing being a favourite asset, an indirect channel due to the fact that personal savings are becoming more in the form of intermediaries, banks, trust companies, and so on, and might channel more into the residential market than other forms of savings, whatever they might be. There have also been arguments that with inflation people like real estate; it's a good investment, it's a hedge, and there have been some hypotheses that one reason people are saving more is that they are trying to buy real estate, but in the housing industry who are you going to buy it from? All our real estate is here; we can only sell to one another, unless we construct some new houses. And I don't think residential construction performance in the past decade, or half decade, indicates that we have channelled a lot of new investment funds into that area. In fact, if anything, that industry has slowed down.

I don't really think that there has been a great change in the type of investment that is being financed by savings.

JOHN BOSSONS: One thing that has happened is a reallocation of savings both to short-term investments and towards owner-occupied housing. That may not have had such a dramatic effect on construction in the housing industry because in effect the construction effect has been offset by what has happened to the interest rates, but it has had a very substantial effect in pushing up the value of owner-occupied houses. Indeed, I didn't have time to report these calculations, though I reported them in another paper I gave yesterday to the Tax Foundation. If one works out the tax benefits of the exemption from capital gains tax of owner-occupied housing, the major effect of which is to exempt from tax the inflation-created illusory gains on housing, the present value of that tax benefit with reasonable expectations about holding periods and expected rates of inflation derived from long-term bond yields is that probably about half the increase in the real price of houses, that is, the increase after subtracting the effect of just keeping up with inflation, is attributable to this tax effect. If you add that very substantial tax benefit, plus the effect on the inflation risk, you have a very substantial reallocation of funds that is primarily pushing up values rather than actual real investment. As a result, it has diverted funds that otherwise might have gone into the corporate sector through direct investments; that's only to some extent, and it has been partially offset by increases in flows through deferred tax schemes such as RRSPs, but I think that it's only partial, and that the net effect of the reallocation on investment is really negative.

COMMENT: I'd like to make a point in relation to the last point that was made by Professor Shoyama. In regards to our reservations about indexation, I just want to point out the fact that any policy without precedents may impose net costs on us and that is why we have to remember the marginal rule in economics which says that we have to adopt a policy to the extent that the marginal cost of that policy is equated to the marginal benefit of that policy. Similarly when you suggested that we should take the other rule, that is to reduce inflation itself. I just want to point out that reducing inflation also has its costs and benefits and we should adopt those policies so as to equate the marginal cost of reducing inflation to the marginal benefit of reducing that inflation.

QUESTION: I would like to address this question to Professor Jump. I think we are all familiar with the idea of full-employment budget surplus in times of recession. Maybe the government deficit is overstated because tax rates generate less tax revenues and we pay out more transfer payments. Maybe we should also be adjusting the deficit. The fact that inflation is unanticipated means that the government as a debtor actually gains in real terms, so that when we are in a period of stagflation maybe we should be adjusting the budget for two variables, first for the recession and second for the unanticipated inflation. In that case maybe the deficit would turn from a minus five billion to a plus number. Is that your impression, and if inflation were fully anticipated how would that effect the deficit?

GREGORY JUMP: The comments I was making were in regard to an expected inflation, not unexpected inflation. An unexpected inflation will indeed result in a real transfer of resources, but expected inflation will not necessarily do so. The adjustments that I have been talking about in terms of adjusting a budget surplus or deficit really were with regard to the expected inflation. There is the second adjustment that we've had for some time, we are all familiar with - if you want to get the fiscal impetus provided by a deficit to put on a full-employment surplus basis. My colleagues at the Institute, Tom Wilson and Peter Dungen, have actually done some computations using full-employment budget surplus historically for Canada, with an inflation adjustment as well. These are contained in a paper that was done for the Economic Council of Canada.

JOHN BOSSONS: Just on a couple of points that were raised by Tom Shoyama. First of all the question was raised about the offsetting effects, the extent to which the capital cost allowance provisions by themselves can be taken as the source of what I was talking about. In estimating the effects of investment, I used the FOCUS model, which, as a macro-econometric model, includes in the effect of investment all the feed-back effects of the changes in demand that would be induced by the tax policy change. The investment equation also includes the impact on investments of the current demand position. So essentially in simulating the impact from 1974 onwards of indexing capital cost allowances, that's an estimate which describes what the effect is, taking into account all of the aspects of the context that existed in each of those years. As a result I think it's a more useful estimate than what one might get directly just by, say, getting a partially deliberated estimate derived from the investment approach.

The second question was whether or not trying to bring down the rate of inflation wouldn't perhaps be a better policy than doing things that offset the effects of inflation, such as indexing capital cost allowances. I think the major point I want to make is that things like the lack of indexation of capital cost allowances make it harder to bring down the rate of inflation because of their effects on the aggregate supply curve. In other words, by shifting the aggregate supply curve inwards by reducing capital formation, they make it harder to bring the rate of inflation down and in that sense are contributing to the length of time it takes for the economy to adjust to the initial supply shocks.

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